

THE MEDICAL REPOSITORY.

VOL. II.—No. I.

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1798.

MEDICAL REPOSITORY

ADVERTISEMENT

VOL. I. NO. 1.

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ADVERTISEMENT,

THE list of Subscribers, which accompanies the present Number of the REPOSITORY, is less complete than the Editors expected. But, in addition to unavoidable omissions from the lateness of the returns from some parts of the country, several names do not appear which would do honour to any publication. This happens from the circumstance of their having been annexed to the subscription list since the printing of that now delivered was completed. It was deemed proper to notice this publicly, that the Editors might be exculpated from all possibility of a charge of indecorum towards those whom they have numerous reasons to respect.

New-York, July 31, 1798.

ADVERTISEMENT

The City of London, which comprises the
greater part of the County of Middlesex,
is divided into four wards, each of which
is represented by two Aldermen, who are
elected by the Common Council of the City.
The Aldermen are elected for a term of
years, and are subject to re-election.
The Common Council of the City of London
is composed of the Aldermen, the Burgesses,
and the Commoners of the City. The
Common Council is the governing body of
the City, and has the power to make
laws for the City, and to manage the
City's affairs. The Common Council is
elected by the Burgesses and Commoners
of the City, and is subject to the
approval of the Aldermen.

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ARTICLE I.

*A CASE of diseased OS INNOMINATUM successfully treated,
By E. A. HOLYOKE, M. D. of Salem, Massachusetts.*

CAPTAIN S—F—, of a firm, sound constitution, when about forty years old, on the 14th of February, 1783, as he was walking upon the ice, at that time covered with a light snow, suddenly fell, with his whole weight and great force, full upon the left os innominatum: the shock was great, and the pain, for the moment, very considerable; but as it soon ceased to be troublesome, it was entirely neglected. About three or four weeks after, he began to feel a pain in the injured part, extending down to the sole of his foot, which growing daily more and more uneasy, induced him to attend to it. By the latter end of April he could walk but very indifferently, even with the help of his cane; and every motion aggravated the pain to a great degree. And when in bed, he found himself unable to lie on his left side more than a few minutes; and was obliged to place the limb in a certain position, in order to obtain any tolerable rest, which, with all his care, was much interrupted. The whole outside of the leg was now so tender, that he could ill bear even a slight rubbing on the part with his own hand. He used to resemble the sensation he felt down the whole outside of the limb, to what would have been produced by putting a ragged wire up and down through the sinews.

These complaints so much resembled rheumatism, that the medicines prescribed by his physician were adapted to that conception of the case. Mercurials and antimonials, with guaiacum, &c. internally, and embrocations of tinct. cantharides, opodeldoc, &c. externally, were employed, but without any relief: he lost his appetite, his flesh, and his strength; and grew much dejected and alarmed at the apprehension of incurable lameness.

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B

I was now, about the middle of May, called in to advise with the gentleman who had hitherto attended him, from whom, and the patient, I had the above state of the case.

Upon examining the hip, we found, at first view, the spine of the left ilium turning more outwards, and much more prominent than the sound one; the left hip evidently much higher than the right; the trunk of the body leaning over to the right, so as that there was an utter inability to stand erect.

In addition to the medicines he was taking, we advised to a blister upon the part: a large vesicatory was accordingly applied, so as to cover almost the whole os innominatum. This application had an agreeable effect, the symptoms being all somewhat relieved. A little before this, I had met with Mr. Pott's publication, in which he recommends the use of setons and issues, in cases of paralysis of the lower limbs, from distortion of the spinal vertebræ. It occurred to me, that there was an analogy in the two cases, sufficient to induce us to a trial of his remedy; especially as the blister, which has an action of a similar kind, was found to give a sensible alleviation. As, however, we expected the arrival of a physician of eminence, from Boston, the matter was postponed till we had his opinion upon it. He accordingly came the next day.

We now examined the parts again with great attention, and were convinced, by the most accurate admeasurement we could make, after placing his heels exactly together, and then causing him to stand up as erect as possible, that the spine of the left ilium was precisely two inches and four-tenths higher from the floor than the other, and that it projected much further out from the spina dorsi; and that the whole bone on that side was much enlarged; and that the trunk of his body leaned over to the left, in an angle of about 25 degrees from the perpendicular: nor could he, by any exertion, stand more upright; and this effort, he told us, was so painful, that he could scarcely endure it.—My proposal was adopted, and it was now agreed to apply a caustic upon the part, and to keep up the discharge till we had made a fair trial of its effects; to continue the use of the mercurial and antimonial medicines, as advised by Dr. John Fothergill, in ischiatic cases, and still apply the warm embrocation: and, by the advice of another gentleman of the faculty, Dr. Home's volatile linament, spread upon leather, was applied to the whole outside of the limb.

The caustic was applied the next day, and an eschar produced of the bigness of a crown piece. As soon as the eschar cast off, a piece of wax, of the bigness of a large coat-button, was made use of, by way of pea, to keep the ulcer open.

The good effects of this procedure soon grew sensible; the pain and stupor grew less and less daily; and, in the course of eight or

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ten weeks, he could walk with ease about the house without his cane; the distortion of the hip-bone diminished, and the difference of the height of the hips, which had been about two inches and a half, was, by July or August, reduced to half an inch only, and by September, was so far removed, that no difference was discernible; his lameness was comparatively trifling, being able to walk two miles at once without difficulty.

He still went on mending; but as the winter approached, he complained of pain and numbness on the outside of the limb, when exposed abroad to the cold: and as we were of the opinion that a warmer climate might accelerate his recovery, we advised him to spend the winter in the West-Indies. He had now for some months laid aside all his medicines, except that he still wore the linament mentioned above, on the outside of his leg, on account of the increasing coldness of the weather. We advised the ulcer in that hip, however, to be kept open during his voyage, at all events. He found the warmth of a more southern atmosphere very agreeable; and when he returned the following June, informed us he had been gradually mending during the voyage, and though not entirely free from all uneasiness, the numbness being still a little troublesome, especially in cold damp weather, yet in good health and spirits. We advised him to keep the ulcer open still, which was agreeable to his own ideas of the matter, as he, as well as his physicians, attributed his cure chiefly to the caustic. By degrees he recovered perfect health and soundness; when, finding it of no further use, he threw out the wax, and suffered the ulcer to heal.

IN reciting this case, I have not suggested any suspicion, though I had many at the time, that the appearances might, at least in part, be owing to a tumefaction of the glands of the acetabulum, which furnish the synovia of the joint; because it was a matter of uncertainty, and because the evident enlargement of the hip bone seemed adequate to the observed appearances; yet it is certainly very possible such a tumefaction might take place, and if it did, would naturally lengthen the limb: as we find not unfrequently, children and young persons afflicted with a dreadful disease in consequence of such injured or obstructed glands; the patient commonly complains first of lameness in the whole limb, though the seat of it is often supposed to be in the sinew; but upon a careful examination, the lame limb is found to be longer than the other; and when this is observed to be the real state, the origin of the disease is, I believe, commonly referred to a morbid state of the glands of the acetabulum; which, if not

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remedied in season, frequently terminates, as surgeons know but too well, in abscesses, which produce fistulous and often carious ulcers, incurable lameness, luxation of the femur, hectic fever, and sometimes death. If, now, such a diseased state of these glands did really exist in Captain E——'s case, in consequence of the injury received by his fall, does not the fortunate event in his case lead us to hope, that the like application of a caustic to the part, in children under the predicament now mentioned, made as soon as the lengthening of the limb becomes sensible, might be attended with happy effects, and stop the progress of a mischief, which, neglected, soon becomes remediless?



ARTICLE II.

AN EASY AND CHEAP METHOD OF PREPARING
SAL AERATUS.*

By E. A. HOLYOKE, *M. D. of Salem, Massachusetts.*

SAL Aëratus, or the salt formed of vegetable alkali saturated by fixed air, (carbonic acid) is, on many accounts, so useful, that a communication of an easy method of preparing it, at little or no expence, may be beneficial. The following may therefore be acceptable, if it be not already commonly known. I have myself prepared this salt for 10 or 12 years past in this way, and it is now kept in our apothecaries shops.

Take a large wooden box,† bore eight or ten holes, half an inch in diameter, in the side of it, just below the lower edge of the cover, at nearly equal distances all round; bore also as many holes in the circular bottom of the box, close to the edge of it: then take another box of the same kind, but of a smaller diameter by half or three quarters of an inch; place this in the larger, and to keep it steady, thrust three or four wooden wedges between the two boxes. The two boxes‡ being thus prepared, fill the inner one with the purest salt of tartar, or clean well calcined pearl-ashes, or any clean pure fixed vegetable alkali: put its cover on the outer box, leaving the inner one uncovered; sling this double box thus filled, with a cord, and suspend it in a distiller's vat or cistern, while the wash is fermenting, a little above the liquor, or in an empty cistern, if it has been much used, and still retains the fixed air: let it remain in this situation for six weeks or two months, or longer if it is not wanted; let it then be taken out, and the salt now fully saturated with the acid, be exposed to the sun and air to dry.

The salt thus prepared, does neither effloresce nor deliquesce in the open air, and for all common purposes is, I believe, equal to that prepared by crystallization.

Note. The pearl-ashes had better be put into the box in moderate sized lumps, than in powder, that the air may have free access to it.

* Carbonate of pot-ash.

† I make use of a common cylindrical box, about nine or ten inches in diameter, and between five and six inches deep.

‡ The design of the outer box is merely to prevent any dust or dirt from getting into the salt, while the holes in it suffer the fixed air to be freely admitted.

But if any chuse to have this salt in its most perfect form, let him proceed in this manner.

Dissolve as much of the clean vegetable alkali, in boiling rain or other pure water, as possible; filter the solution through paper, pour it into a jar of stone or earthen ware, cover the vessel in such a manner as that the air may have access to it, but so as to exclude all dust or foreign matter. Let it be hung by a cord in a fermenting vat, or cistern, for a month or two, in which time, a great many crystals will be formed: from which the superfluous liquor may be poured off, and the salt dried in Hippocrates' sleeve. The superfluous liquor may be again saturated with more alkali, and again exposed to the air in the cistern, without any loss. This last is, without doubt, the most perfect mode of preparation, and I have sometimes made use of it; but as it is much more troublesome to make than the other, and as the other, for all medicinal purposes, is perhaps equal to this, I have for the most part employed it.

This salt is much more tolerable to the palate, and may be taken in larger doses than the naked alkali; and as it is decomposed by vegetable acids as well as the mineral, it may be exhibited, instead of the alkali, in perhaps every case where the latter is proper, unless the fixed air is judged improper.

It is much superior to common alkali in forming Riverius' antiemetic effervescing draught, as it contains a much larger proportion of fixed air (in which the principal virtue of that medicine is supposed to reside) than the mildest fixed alkali, and is at the same time much more palatable.

I commonly direct about 3 ii or rather more of this salt, to be dissolved in 3 iii of fair water; a large spoonful of this solution, added to the same quantity of good vinegar, or lemon juice, at the instant of swallowing it, makes an agreeable dose. But the taste of this solution is so mild, that if the prescriber chuses, a spoonful of it may be swallowed alone first, and as much vegetable acid immediately upon it, in which case none of the gas will be lost.

When acidity abounds in the first passages, a little of this salt added to any bitter infusion, or the dry salt added to powder of columbo, or any peptic powder, is an effectual antacid.

In calculous cases, this salt is recommended by writers, particularly by the celebrated Dr. Cullen, in his *Materia Medica*, vol. ii. ch. 13. as being an happy expedient for conveying larger quantities of alkali into the stomach, than it can bear in its natural state.

Hitherto the common mode of preparing the salt for this purpose, I believe, has been by impregnating a solution of fixed alkali with fixed air, by means of Dr. Nooth's machine, but any one who has prepared the medicine in both ways, will readily give the

most decided preference to that above described, on account both of ease and cheapness.

It is scarcely worth mentioning, that, for æconomical purposes, such as promoting fermentation in dough for bread or cakes, where pearl-ashes is commonly employed, the sal aërat^{us} is much to be preferred, on account of the much larger quantity of fixed air eliminated in the process.



ARTICLE III.

A Letter from the Rev. JEDIDIAH MORSE, D. D. to Mr. Smith, including a Totograthical Account of Charlestown, (Massachusetts) with Bills of Mortality, &c. &c.

DEAR SIR,

Charlestown, February 10, 1798.

A GREEABLE to my promise, I now send you a bill of mortality, &c. for this town, to which I have prefixed such a description of the town as I thought necessary, to enable you to judge of its comparative advantages and disadvantages in point of health, and have annexed some explanatory remarks.

A considerable part of the materials for these bills was furnished by Dr. JOSIAH BARTLETT, the physician of this town, who has been in the habit of keeping a good account of the births and deaths within the limits of his practice. His bill of mortality I have carefully compared with my own, and one kept by another gentleman in town, so that I imagine the bills, in all respects, are as accurate as could be desired.

If this kind of information falls within your plan, and this communication should be thought deserving a place in your valuable Repository, you have my leave to publish it. I wish, should it be published, it may invite similar communications from different parts of our country, that so, in a course of years, a mass of materials may be collected, from which some skilful person may be enabled hereafter to compile tables, with accompanying remarks, which shall shew what are the prevalent diseases in the United States—the probable causes of the prevalence of different diseases in different places, and at the different seasons of the year—the natural increase of inhabitants—the comparative healthfulness of the several towns and larger districts in the United States, &c. &c. and, in general, the probability of the continuance of life in the several States.

With great esteem, I am, dear Sir,

your most obedient servant,

JEDIDIAH MORSE.

A Bill of Mortality, and of the Births, Marriages, and Baptisms, and a List of rateable Polls, for the town of Charlestown, (Massachusetts) for the years 1789 to 1797, both inclusive: to which is prefixed, a Description of the Town.

DESCRIPTION OF CHARLESTOWN.

C HARLESTOWN is a maritime town, of an irregular form, extending seven and a quarter miles in a N. N. W. and S. S. E. direction, of unequal breadth, on an average, about one

mile. The scattered inhabitants in the northern part of the town, constituting about a tenth part of the whole number, are set off to the parishes in the adjoining towns, and are not included in the following bills.

The compact part of the town is on a *peninsula*, of a pyramidal form, (the base of which is Charles river) about one mile and a quarter in length, and about half a mile in breadth. On this peninsula, (including about a dozen houses without the neck, which belong to the parish) are about 260 dwelling-houses, all (two excepted) of wood. There is but one house for public worship in the town, and that is for congregationalists, situated near the bridge, in N. Lat. $42^{\circ} 23' 26''$. There was but about half the above number of houses in 1789. The number of inhabitants will be best ascertained from the list of rateable polls inserted among the following tables.

There are, on the peninsula, two rope-walks, an alms-house, a rum distillery, a dye-house, two tallow-chandlerys, four slaughter-houses, and eight tanneries and leather-dressers' works. The slaughter-houses and leather-dressers' works are situated on tide-water, and, in general, attention is paid to their cleanliness.

The peninsula is connected on the *south* with Boston, by a bridge 1500 feet in length, over Charles' river. On the *north* it is joined with the Main, by a narrow artificial neck or isthmus, which, at high water, in spring tides, is but a few rods wide. On the *east*, it is washed by *Mystic*, a salt water river between two and three hundred rods wide. To the south-east, spreads Boston bay and harbour: to the south-west another broad bay, which receives Charles' river, and projects northward along the *west* side of the town. Across the northern part of this bay, a dam was thrown many years ago, and mills erected upon it, which were destroyed with the town in 1775; but have been lately re-built. The extensive body of marsh, which, in consequence of this dam, is kept longer overflowed, being *salt*, occasions no injury to the health of the inhabitants.

Besides being encompassed with tide water, the peninsula is, in other respects, well situated for health; being open to the sea and land breezes, and charmingly diversified with gentle hills, which overlook Boston and its harbour, and beautiful islands, and the adjacent towns in every direction, and has neither stagnant waters nor offensive marshes.

The town is intersected by *eleven* irregular streets, besides lanes and alleys. The main street, which is 50 feet wide and paved, runs through the center of the town, north and south, from the bridge to the neck. On this street, within a few rods of the bridge, is a spacious square, surrounded with handsome houses and stores. The water in the numerous wells in town, is pure and

good. The trees were all destroyed with the town in 1775: many have been since planted, but are yet small, and are not thrifty.

In the months of April and May, easterly winds prevail, which are chiefly unelastic, and fraught with sea vapour, and are disagreeable and depressing to all, and pernicious to invalids, to such especially as are afflicted with bilious and hectic complaints, which are the most prevalent diseases in the town. The inhabitants are subject to no endemical diseases. Scarcely a year passes without several instances, in the months of August, September, and October, of malignant bilious fevers; but these have generally happened in the neighbourhood of slaughter-houses, or leather-dressers' work shops, where there is more or less of putrid matter.

At those periods when the *small-pox* has visited Boston, this town has shared in the same calamity. The last time it prevailed was in the year 1792, in the months of September and October, when 1352 persons were inoculated, of whom nine died; twelve took the disease the natural way, of which number three died. Of the whole number inoculated, 879 were inhabitants of the town, of whom nine died; the others were persons from the vicinity, who availed themselves of so favourable an opportunity of taking the disease by inoculation.

The destruction of this town in 1775, reduced many of its affluent inhabitants to great straits and difficulties, and very considerably increased the number of its poor. How far this circumstance, connected with that depression of spirits which is ever the effect of a sudden loss of one's all in this world, may have operated to increase the bills of mortality, cannot be determined.

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BILL OF DISEASES.

DISEASES.	1789	1790	1791	1792	1793	1794	1795	1796	1797	Total.
Apoplexy		1			1	1		1	1	5
Atrophy	1		1							2
Cancer	1	1				1			2	5
Canker	2	3	1	1	3	1	4	9	3	27
Cholera Dysenterica					4					4
Consumption	5	7	4	3	4	3	4	10	7	47
Convulsions	1	1	1	1	2	2	2		1	11
Dentition	1	1								2
Diarrhœa					2					2
Dysentery				1		2	1	3	2	9
Dropfy	1		1		1	1	2	1	1	8
Erysipelas			1							1
Fits								5	4	9
Fever.	{	Bilious		1				2		4
		Inflammatory			1		2			3
		Nervous	1		2	2	1	3	3	12
		Puerperal				1				1
		Putrid		1	1	1	1	1	2	11
Fistula in Ano			1			1			1	3
Gangrene			1		1			1		3
Gout	1				1					2
Hæmoptisis					1					1
Hepatitis				1		1			1	3
Hernia	1									1
Hooping Cough			1					1		5
Hydrocephalus		2					1	2		5
Influenza	1									1
Lues Venerea								1		1
Measles		4								4
Old Age		3		4	3	2	2	5	5	24
Palfy	1	1		1		1	4		1	9
Phthisis Pulmonalis	3	3	4	5	4	1		4	5	29
Phrenitis									1	1
Quinsey					1		3	1	2	7
Scarlatina Anginosa							4	2		6
Scrofula		1								1
Small-pox				9						9
Still born	1	1	2	4	2	2	2	5	3	22
Sudden						3	2			5
Worms		1					2		1	4
Casualties.	{	Drowned	3					1	1	5
		Fall	1							1
		Frozen						1		1
		Overlaid		1			1			2
		Poisoned				1				1
		Suffocated		1						1
Died abroad								6	1	7
Total each year	22	35	26	32	32	26	38	65	49	325

Total number of deaths, in nine years, 325—births, 576—baptisms, 310—marriages, 115 in 8 years and 4 months.—*Remark.* About one quarter part of the whole number who have died have, it appears, died of *bedic complaints*.

An Account of the quantity of rain which fell in Charlestown in six years, from 1792 to 1797, both inclusive. By JOSEPH BARRELL, Esquire.

	1792	1793	1794	1795	1796	1797	Average.
January	550	3587	5671	2677	2390	2670	2924 $\frac{1}{8}$
February	1500	3393	1423	1048	2212	4330	2317 $\frac{1}{8}$
March	5212	5905	4068	2916	2526	5240	4311 $\frac{1}{8}$
April	3114	1791	829	7113	722	3805	2901
May	2440	2840	831	3609	3915	3405	2840
June	2171	2022	2542	2087	1222	2090	2022 $\frac{2}{8}$
July	1825	1212	2132	5357	2285	2962	2628 $\frac{1}{8}$
August	1690	1087	4035	6077	1455	5090	3239
September	3482	2860	1782	5266	4800	1300	3248 $\frac{2}{8}$
October	2020	2272	4175	4088	1995	5135	3280 $\frac{5}{8}$
November	6324	4248	1364	2201	1020	3055	3035 $\frac{2}{8}$
December	130	1119	2257	3198	1225	2100	1671 $\frac{1}{8}$
Total	30,488	32,336	31,109	45,637	25,707	141,182	34,420

REMARKS.

Mr. Barrell's house, near which is his rain-gauge, is well situated to determine the quantity of water that falls, it being elevated about 60 feet above the level of high water mark, and is distant from any other houses, so that no water can fall into the gauge, but that which comes directly from the clouds. The water in the gauge was measured generally as soon as the rain was over, so that none might go off in evaporation.

Mr. Barrell's rain-gauge measures to the $\frac{1}{1000}$ part of an inch, as 1000 lines make one inch.

Nothing is allowed for the *snows* which fell in winter. The water in them may amount perhaps to an average of six or seven inches annually.

BILL OF AGES.

Years.	Still born.	Und. 1 yr.	Betw. 1&2	Betw. 2&5	Bet. 5 & 10	Be. 10&15	Be. 15&20	Be. 20&25	Be. 25&30	Be. 30&40	Be. 40&50	Be. 50&60	Be. 60&70	Be. 70&80	Be. 80&90	B. 90&100	Total.
1789	1	3	1	2		1				1	3	3	4	3		1	22
1790	1	7	5	3		2			1	4	2	4	3	1	3	1	35
1791	2	7	2	2		2	1	1	2	1	2	1	1	2			26
1792	4	2	3	3	1	2		1	2	2	1	5	2	1	3	1	32
1793	2	6	9	2		1	1	1		2	2	2	2	2	2		32
1794	2	4	1	1	1	1	2	2		3	2	2	2	1	1	1	26
1795	2	6	1	7	7		1			4	2	1	2	5			38
1796	5	15	8	2	2	3	1	6	4	3	3	2	2	5	1	2	65
1797	3	9	2	3	2	1	2	2		5	4	3	1	5	2	1	49
Total.	22	59	32	25	13	11	8	13	13	23	21	23	19	25	12	6	325

* Five of these, who were young men, died abroad.

Remarks. From the above bill of ages it appears, that 138, out of 325, (the whole number of deaths) were under the age of *five years*; i. e. about two fifths of the whole; and that 43, or nearly one-eighth of the whole, were upwards of *seventy years* old.

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MONTHLY BILL.

Months.	1789	1790	1791	1792	1793	1794	1795	1796	1797	Total
January				2	1	3	5	7	3	21
February	2	2	3	3	2	2		9	5	28
March		2	3		3	1	1		6	16
April	3	3	2	2		3	1	1	4	19
May	1	3	1	3	1		2	2	2	15
June		6	1			1	3	3	4	18
July	1	1	1	3	2	1	1	6	4	20
August	3	4	3		10	3	5	9	2	37
September	3	5	1	7	5	3	5	14	5	48
October	3	4	4	10	3	5	7	5	7	48
November	1	2			3	3	5	6	3	23
December	5	3	7	2	2	1	5	3	4	32
Total	22	35	26	32	32	26	38	65	49	325

Note. August, September, October and December are the most fatal months.—The year of the greatest mortality (1796) but little more than half the quantity of rain fell as in the year preceding, and considerably less than in any of the nine years included in these tables.

Table of Births, Marriages, &c. for nine years.

Years	Births.			Marriages.	Baptisms.	Rateable Polls.*	
	Males	Females	Total			In whole town.	In parish
1789	30	22	52	2†	21	366	330
1790	20	20	40	8	20	350	315
1791	26	21	47	10	30	352	317
1792	32	14	46	12	21	360	324
1793	33	31	64	15	48	383	345
1794	32	32	64	14	42	489	440
1795	40	37	77	12	44	562	502
1796	50	33	83	23	28	623	543
1797	62	41	103	19	56	609	544
Total	325	251	576	115	310		3660

* Males only, from 16 years old and upwards, are included in the rateable polls.—As this bill comprehends that part of Charlestown only which is within the parish, which includes about a dozen families without the peninsula, there must be a deduction of about ten per centum from the number of rateable polls, in order to reduce that article within the limits of the others.

The number of rateable polls, to the whole number of inhabitants, in 1790, (when the census was taken, and the whole number of inhabitants was found to be 1583) was as 1 to 4½. The proportion since, owing to a great accession of mechanics, &c. is thought to have been as 1 to 4. Admitting these data to be just, it appears, that, on an average for 9 years, 1 in 45 of the inhabitants of this town have died.

The natural increase of the parish, in nine years, has been 251: the increase by immigrations has been much greater than the natural increase.

† From August of that year.

ARTICLE IV.

THEORY OF PUERPERAL FEVER.

*Communicated in a Letter to the Editors of the Medical Repository, by
Dr. JOHN BRICKELL, of Savannah.*

DURING my course of anatomical studies, which continued several years, I had some valuable opportunities of dissecting women who died of puerperal fever; and upon perusing treatises written expressly on this subject, by the British physicians, Denman, Leake, Hulme, White, and Young, I readily perceived such a mixture of truth, error, and misapprehension, as convinced me that they had examined this business too slightly, and rashly made up their opinions from partial and defective premises. One having found marks of inflammation in the epiploon, pronounces the disease an omentitis; another, in opposition, declares it an enteritis, having found the peritonæal coat of the intestines inflamed; but Dr. Young ridiculously mistakes the effect which sometimes takes place for the cause, declaring it a typhus.

The following *rationale*, being actually deduced from nature, viewed in a variety of aspects, will, I hope, present an investigation that may place this question in a clear light.

From the time of conception to the moment of parturition, the increasing bulk and weight of the uterus pressing on the abdominal vessels, forms an increasing resistance to the motion of the blood there; and this resistance is arrived at its maximum the moment before delivery. When delivery takes place, the resistance to the motion of the blood is at once removed; and the abdominal parts, having been long on the stretch, are now in a state of relaxation; so that if the weight of the infant, with its concomitants, be $=W$, and the relaxation of the abdominal parts $=R$, then the diminution of resistance to the impetus of the blood towards the abdomen, will be $=W+R$. This diminution of resistance increases the blood's velocity in *exactly the same proportion*, as is demonstrated in the first book of Sir I. Newton's Principia, Lex iii. and Schol. Corollar. 6. *Superatâ resistantiâ, vis redundans accelerationem sibi proportionalem producet.* So that the blood's velocity is now increased by an addition of $=W+R$.

Moreover, the resistance to the motion of the blood in the ascending aorta being unaltered, while that in the descending branch of the same artery is diminished, the heart, governed by hydraulic principles, propels this fluid with most velocity, and in greatest

quantity, to the abdomen, the direction in which there is least resistance; and thus the brain collapses by having its circulating fluid turned downwards, in greater or less quantity, often producing syncope, and sometimes spasms, from the irregular oscillations of the nerves, and a want of libration in the system. Let the quantity of blood circulating in the lower arteries be $=Q$, and the amount of that, diverted from the aorta ascendens, be $=D$, then the quantity impelled into the abdomen will be increased to $Q+D$: but the quantity multiplied into the increased velocity will give the increased momentum, or force, with which it moves, which will be equal to $W+R \times Q+D$.

This sudden and impetuous influx of the blood; so increased in quantity and velocity, gives it an increase of force which distends the finer vessels of the abdomen more than usual, and (as in the tunica albuginea of an inflamed eye) carries it beyond the limits of circulation assigned to it by nature. Arteries, fitted to convey a small quantity of blood only, are now, by the *impetus a tergo*, distended and surcharged by an unusual increase of their contents; and vessels, adapted for the circulation of finer fluids (whose diameters are too small for the admission of blood globules), are stretched by the momentum of the circulation, and blood is propelled into them. The unusual distention of the extreme vessels produces stimulus; stimulus produces excitement; excitement produces inflammation; and, in consequence, fever. The inflammation will be more or less extensive, and its concomitant, fever, more or less violent, in proportion to the force of the acting causes.

A due consideration of these circumstances will explain the various appearances to be found in women who die of puerperal fever. Every part supplied by the descending aorta is liable to be attacked with more or less severity, according to its structure, situation, and the constitution and peculiar circumstances of the patient. When a plethora exists in a woman of lax fibre, the highest degree of danger is to be apprehended, especially in chilly damp weather, which weakens the system, and increases its excitability: on the contrary, when the fibre is elastic, unaccompanied by plethora, especially in dry temperate weather, which is favourable to the recovery of the tone of the system, the danger is least—and the infinite variety of gradations between these two extremes, produce an equal number of differences in the state of this disorder: so that a discerning physician, who knows the constitution and circumstances of the patient, making due allowances for her equanimity or unsteadiness of temper, may calculate pretty exactly, *a priori*, the quantum of danger to which she may be liable.

From what has been said, it is evident, that the blood is the great

instrument of danger, from its *excess* in the abdomen, and its *defect* in the head; its excess producing fatal inflammation and fever, and its defect producing syncope, and spasms, that sometimes carry off the patient soon after delivery: our great attention, therefore, ought to be directed to the regulation of its motions, so as to detach from the abdomen the superabundance, and lessen its momentum there; and to restore to the brain the quantity diverted from it, and which is necessary to remove its collapse, and re-establish the libration of the nervous system.

For this purpose a broad bandage or two may be placed under the woman, ready to be properly tightened over a small pillow on the abdomen, as soon as delivery is affected: to serve as an artificial pressure and restraint on the influx of the blood (instead of the uterine pressure before the birth), and the abdomen ought to be elevated above the horizon, and the head depressed, that the velocity of the blood may be checked by its gravity, and its return to the head accelerated by the same cause. If cordials are given before this, the heart will be stimulated to act with more vigour, the abdomen will be more filled with blood, and the head more emptied; and so the danger increased.

Should enteritis, peritonitis, epiploitis, or any other inflammation ensue, I apply the antiphlogistic means; but with reserve, on account of the natural discharges. I sometimes draw blood from the arm; and, in cases of extreme violence, I have repeated this operation three times in one day, with the happiest effects.

I once dissected a woman who died of a most violent puerperal fever. The whole surface of the peritonæum, strictly so called, as well as the parts of it which give the exterior coats to the intestines, uterus, bladder, &c. had, with other marks of high inflammation, a coat of pus, like that observed in the corner of an inflamed eye, and as thick as broadcloth.

As I write for men, I do not find it necessary to repeat the particulars to be found in every practical treatise: my principal aim being to establish a just theory, which must be productive of a reasonable practice.

Should this little essay contribute to lessen the sufferings of the fair sex, or save any of their precious lives, it will make me happy.

Wishing all success to your useful and commendable labours, I am, Gentlemen, very respectfully, your fellow-citizen,

JOHN BRICKELL.

Savannah, March 20, 1798.

ARTICLE V.

Abstract of a Dissertation on the SICK HEAD-ACH, read before the Medical Society of Hartford County, Connecticut, September, 1797, by Dr. NATHANIEL DWIGHT.

THE Author of this Dissertation, after noticing the general silence of medical writers on the subject of which he treats; that Dr. Fothergill alone has formally considered it; that the *Sick Head-ach* is a disease of uncommon severity, and commonly supposed incurable; that, therefore, a remedy adequate to its radical cure must deserve to be highly valued; and that the efficacy of the one which he shall propose, can be verified by many persons, and, in particular, by Drs. Fish and Cogswell, of Hartford; proceeds to a description of the disease.

“In the morning, when the patient first awakes, he feels a pain in the head; sometimes fixed over one, and sometimes over both eyes. Sometimes it is in a different part of the head; not unfrequently immediately under one or the other parietal bone; and often it is in the region of the occiput. In some instances it is wandering; in others it is fixed. But ere long it spreads from its first situation so as to affect the whole head; though it remains most severe in the part originally affected. This pain is always, from the first, attended with universal languor; and generally, at the first, these feelings are unattended by any nausea. But, from the beginning, there is a total loss of appetite; an aversion to every flavour, even to those which are at other times the most grateful; an indisposition to move; a desire, without the power of sleeping; and coldness over the whole frame, more particularly of the extremities. In this situation, light becomes very irksome, and likewise every effort to converse.—These are the most obvious symptoms of the disease, in its commencement; but, sooner or later, it progresses much in the following manner.

“From an aversion to food, the stomach feels an uneasiness which is indescribable, but speedily arises to a greater or less degree of nausea. In some instances the nausea soon becomes sufficiently strenuous to excite a voluntary retching to vomit; which, if it is effected, generally affords sudden relief, to such a degree that the patient readily falls into a sleep, from which he awakes well—complaining only of a soreness about the head, which commonly subsides in a few hours. In other instances the nausea becomes very distressing, but does not produce a retching. In these cases, the disease generally continues much longer, and is, perhaps, not the less painful. In some persons, its course is finished in

twenty-four hours; in others, not under forty-eight; and in some, it continues even longer.

"However, whether the nausea produces vomiting or not, from its first accession, the pain in the head becomes more severe and intolerable; and, in this way, the pain and nausea operate mutually as cause and effect.

"From the first perception of uneasiness in the stomach, the spirits begin to flag. They grow more and more depressed, until cheerful thoughts and feelings fly away, and the patient conceives himself the most wretched of human beings, and feels as if he were never to be otherwise.—What, perhaps, is a little singular, is, that the intellect, during this severity of pain, is peculiarly clear, precise, and capable of making the most minute distinctions, upon intricate subjects. And these operations of the mind, though very painful, are wholly beyond controul; nor, in these moments of depression, though reason suggest the folly of despair, and the fallacy of the belief which it inspires, will the feelings assent to its suggestions.

"The symptoms now enumerated are those which most usually attend the *Sick Head-ach*. But there is some variety in this disease which merits notice. This complaint is sometimes attended with a distressing *vertigo*, from its commencement; which is not an usual symptom in common cases. In other instances, it comes on with a languor, as is usual, but the languor precedes the pain in the head, as well as the nausea; and, during its continuance there, is an obscure misty appearance, fluctuating over one or other of the eyes, for the space of twenty or thirty minutes. This obscurity then vanishes, the vision becomes as clear as usual, and, for a short time, the patient feels a little encouraged with the prospect of getting well. But this hope is transient. A small, but fixed pain, soon succeeds the obscurity of vision, over the opposite eye to the one which was thus affected. This pain is at first small, but deep seated. It increases pretty rapidly, until, in a short time, it becomes excruciating; and the preceding symptoms are, in general, like those heretofore described in a common case of *Sick Head-ach*. The first of these two varieties is commonly called the *Giddy*, and the last the *Blind, Head-ach*.

"Those who are subject to this disease have it return upon them periodically. But the intervals between the accessions are not of equal length in every instance; nor does the disease return after stated periods, uniformly, in the same individual. Upon some persons it returns as often as every few days; in other instances, in as many weeks; while, in others again, it is not until several months have expired that the *Sick Head-ach* renews its attack.

"So far as my observation has extended, no age is exempt from

this malady; and it may be induced, by a variety of causes, upon almost every constitution. But the constitution, of all others, the most liable to be afflicted with it, is that which is commonly called *Bilious*."

After this history of the disease, and after some explanatory remarks relative to the term *Bilious*, Dr. Dwight delivers it as his opinion, that the *Stomach* is the seat of the complaint; and he accounts for it in the following manner.

He supposes that, in persons possessing what is called a *Bilious* habit, more Bile is secreted than is necessary for digestion; that it becomes acrid in the stomach, and a chemical process takes place in that Organ, in consequence of which the acrid bile subsides, while another portion of the gastric fluids rises to the top in an acid state; that this acidity counteracts digestion, while the acrid bile stimulates the pylorus into a morbid constriction, which prevents the descent of the aliment, and occasions the eructations observed in the commencement of fits of Sick Head-ach. This process, Dr. Dwight supposes, gradually proceeds for some time, till the accumulation of acrid bile in the stomach (particularly favoured by the long interval between the supper and breakfast), becomes so great as to oppress it by its weight, and irritate it by its acidity, to such a degree, that vomiting takes place, the offensive collections are thrown off, and the system restored to its former condition.—The pain of the head, which accompanies this state of the stomach, originates in the connections of the nerves of this organ with the common sensory, and disappears with the ejection of the irritating materials.

The recurrence of the paroxysms of Sick Head-ach, Dr. Dwight thinks, may "be accelerated by a variety of causes—such as stoppage of perspiration; by taking cold; by fatigue, especially in the sunshine; by excess in eating and drinking; by want of usual rest; by eating of peculiar kinds of aliment, which are more offensive than others, especially by using high seasoning, and by drinking ales and beers before they are thoroughly fermented, as well as after they have passed the first state of fermentation. Indeed, almost any error in the non-naturals will produce this malady in *regular* habits." Temperance, therefore, infers the author, is indispensable to the success of any method of cure. It is accordingly enjoined with emphasis; and the most effectual medical aid then becomes the subject of investigation.

In discoursing of the method of cure, Dr. Dwight maintains, that "*vegetable acids*, in a supereminent degree, correct the (*morbid*) acid of the stomach." Mineral acids, he admits, possess a share of this property, but in an inferior degree.

The next object of inquiry is, what vegetable acid is preferable to all other? and in what form? In answer to this, Dr. Dwight

declares, that ample experience has established the superiority of CYDER over every other; and he points out a remedy and mode of cure equally remarkable for simplicity and efficacy. For this purpose, "Cyder must be well gone through the first fermentative process, and no farther. It ought to be free from all taste of the cask, and all other impurities. A quantity of it, from half a gill to a half a pint, should be drunk on an empty stomach, in the morning.

"It is yet questionable with me," continues Dr. Dwight, "though I have taken considerable pains to ascertain it, how long before breakfast the draught ought to be taken. At present, however, it is my opinion, that from five to fifteen minutes before breakfast is the most suitable time."

The efficacy of this remedy, thus taken, Dr. Dwight accounts for, by supposing that it has a more free access, at this hour, to the cause of the disease (now particularly accumulated in the stomach), than at any other, by reason of the absence of food; and, of course, exerts its correcting powers more efficaciously upon it—while food, being soon taken, prevents any disagreeable effects on the head or spirits, which the Cyder otherwise might produce. He, however, lays no great stress on this explanation; but only remarks, that if it be admitted, it shews the reason why it is necessary to persist in the use of this remedy, from day to day, for a long time, which he maintains to be the fact.

In reply to some objections which have been urged against the use of Cyder at the hour and under the circumstances proposed, Dr. Dwight affirms that he has never known it produce a Head-ach, or even drowsiness; that, on the contrary, "it gives a pleasant relish to the food, warms the stomach, imparts a cheerful energy to the spirits, and preserves the habit of body free and regular;" and that all these pleasant effects have been produced in persons who disrelished Cyder, till they had been prevailed upon to use it in this way, for this purpose. The danger of acquiring the habit of tippling from this practice, Dr. Dwight treats as visionary.

The efficacy of Cyder in the cure of the Sick Head-ach, leads Dr. Dwight to the mention of its success in the cure, or rather prevention, of another disease, which he supposes to depend on the same cause—the *Bilious Colic*. That the Sick Head-ach and this species of Colic depend on the same cause, differently applied, he infers—1. From their affecting persons of the same temperament—the Bilious; 2. From their both observing similar periodical returns; 3. From the circumstance of persons who, in the course of their lives, have been subject to both complaints for years, having uniformly experienced an exemption from one during the reign of the other, alternately; and, 4. From the efficacy

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of Cyder in the cure of Colic, as well as Head-ach. "The evidence of its efficacy," continues Dr. Dwight, "is this: The Cyder has been drunk by persons, for months together, with entire relief from the Colic, who, before they began with the remedy, were subject to paroxysms of it every few weeks. After several months had expired, the Cyder was laid aside, and the Colic returned with as great frequency and severity as before. The remedy was resumed, and the Colic again disappeared."


In resuming the consideration of the cure of Sick Head-ach more particularly, Dr. Dwight observes—"It will be readily understood, that I would not, in all cases, rely upon this remedy alone. There are instances where the constitution is worn down by the frequency and excessive severity of the paroxysms, where the stomach is much debilitated, and the whole system greatly enervated. In these cases, it is obvious that the whole tonic plan of cure must be advantageous, when conjoined with the constant use of Cyder. But without this, though the tonic treatment may be productive of some partial benefit, it will rarely afford permanent relief. So the Cyder, though it should operate as a corrector, will not restore the tone which the stomach has lost. This will be done by means of Bark, Steel, Cold Bathing, and Exercise on Horseback, at the same time that care is taken to avoid all meats, seasonings, oils, and gravies, and other errors in the non-naturals, which experience alone teaches us are noxious to the stomach; and which frequently hasten the return of this malady—a malady which, after the longest intervals, always recurs too soon.

"Some persons," Dr. Dwight continues, "when trying the use of Cyder, may be discouraged from making a thorough experiment, if they are not previously warned of the manner in which the Sick Head-ach generally subsides. I have rarely known entire relief *immediately* take place on using the remedy. The more usual progress has been this: The patient experiences a return of several paroxysms; but they are generally after longer intervals, and each succeeding one is commonly less severe than the one immediately preceding it. Care ought to be taken to warn patients of this fact, lest, while the remedy is performing a cure in the usual way, they should grow discouraged on finding the disease return, and, by relinquishing the use of the remedy too soon, should fail of finding that relief from it which a longer use would certainly afford."

In respect to the best season for commencing the trial of the remedy, the author thinks that it should be begun "immediately after the stomach has been evacuated of its contents. With this view," adds he, "I sometimes premise an Emetic, that I may have every advantage from it which the case will admit of. And when I begin with an empty stomach, and pursue the remedy

steadily, in the manner which I have now pointed out, I have, I may say invariably, had the satisfaction of seeing the patients, in a few weeks, entirely relieved from one of the severest natural evils, during its continuance, which ever falls to the lot of mankind."

IN a letter received from Dr. Dwight, by one of the Editors, since the Dissertation was written, he observes; that he has met with an additional case, confirmative of his opinion, that the Bili-ous Colic and Sick Head-ach depend on the same cause. This was the case of a woman, who (without any knowledge of his opinions) informed him, that for several years she had been subject to frequent returns of the Sick Head-ach; but without ever experiencing an attack of the Colic, till within the last three years. Since then the attacks of Colic have been numerous, but the Head-ach has wholly disappeared.



ARTICLE VI.

A CASE OF DIFFICULT PARTURITION, SUCCESSFULLY TERMINATED BY BLEEDING.

Communicated in a Letter to Mr. Smith, by Dr. WILLIAM DEWEES, of Philadelphia.

IN June, 1796, I was sent for to Mrs. T. who was in labour with her second child. The following account, on my arrival, I received from the midwife. "She had been in labour sixteen hours; the waters had been discharged six; the mouth of the womb was but little opened; and, when in pain, the os extermum seemed to close up. Many things had been given her, to force the labour; but the child was still as high as ever. She had not passed her water for twelve hours, and was very costive."

I found her very feverish, complaining of great heat in her abdomen, and violent pain in her head. On examining, *per vaginam*, I found, as the midwife had stated, that the os tincæ was but little dilated, its edges very rigid and hot—as was the whole tract of the vagina; the rectum much distended by hardened fæces, and the bladder considerably distended by urine. The head of the child was still above the brim of the superior strait; but I could not exactly determine its situation with respect to the pelvis, as the os uteri was not sufficiently dilated for this purpose.

I immediately bled her twelve or fourteen ounces, and ordered an injection, which procured her two stools, and a discharge of her urine.—I again examined her, and found the mouth of the uterus more dilated (it being now opened to about the size of half a crown), which enabled me to determine the precise situation of the head. It was a perfectly natural presentation, and the vertex had now descended lower into the pelvis. The pains were very powerful. The head at length cleared the superior strait, and the vertex was about to turn under the arch of the pubes, but completely enveloped in the uterus.—During the pain, the perinæum was much distended; and the os extermum, instead of yielding to the impulsive force of the uterus, rather closed, so that two fingers could not be retained: a seam or cicatrix, from her having the perinæum lacerated in her first labour,* formed a kind of

* The laceration ran, from the inferior termination of the left labium, to about the termination of the sacrum. I judged of the extent of the injury by the cicatrix, which could be easily traced to this place. And, indeed, in

Barrier, and the head, in consequence, was thrown to the right side of the inferior strait, where the parts were so excessively stretched, that I feared each pain would make the head burst through them, in spite of every exertion to the contrary.

From the oblique situation of the head, with respect to the direction of the vagina, the os externum, instead of answering to the axis of the inferior strait, mounted directly to the pubes; and, consequently, the right side particularly of the vagina, perinæum, and rectum, had to support the major part of the force exerted by the uterus and its auxilliary powers. In order to counteract their influence, I supported the external parts with my hands, and made, during the pain, a strong pressure against the head, and directed the woman to suspend her voluntary powers as much as possible. Six hours were spent in this way, without advantage; the os uteri still rigid, hot, and but partially dilated; the os externum still not disposed to yield; and the cicatrix as firm as ever.

The head, notwithstanding my efforts to prevent it, gradually advanced: so that the vertex, covered by a portion of the uterus, had partly emerged from under the pubes. At this period it was extremely difficult to touch the mouth of the uterus, as it had receded towards the sacrum in proportion as the vertex had descended. The soft parts were very hot and dry. I began to be very much alarmed for the fate of my patient. What to do I did not well know. I was ten miles from the city, and no one near me on whose judgment I could rely. In this dilemma I had nearly resolved on dividing the parts, thinking this preferable to letting the head force itself through, which I began to consider as inevitable, when, fortunately, Dr. Physick's case of luxated humerus occurred to my recollection, and determined me to try the effects of bleeding *ad deliquium animi*. I represented to the patient's friends the danger of her case; the possible result of the bleeding; and the inevitable one if it did not succeed. They agreed to the trial. I had her placed erect, while the midwife strongly supported the perinæum, &c. and opening a vein, let it bleed until she fainted.* She was then again placed on her side.

On examining her now, every thing appeared better; the external parts were perfectly soft and yielding, and the os uteri pretty fully dilated: but no pains succeeded. I waited, in this way, half an hour—(the patient continuing very faint)—and no pains

conversing with the gentleman who then delivered her, afterwards, he confirmed my supposition.—It was a long time in healing; and her health suffered much from the excessive and long discharge. But this she recovered; and, when I saw her, she appeared in robust health.—She was about twenty two years of age; of short stature, and rigid fibre.

* The quantity of blood drawn was upwards of two quarts.

coming on, and the parts being now in a proper situation for delivery, I introduced the forceps, and extracted a living, healthy child. The parts very readily yielded without laceration; the woman had a rapid recovery; and the child is still living and well.

Since this case, I have had two others similar to it; both of which were terminated in the same way, except the use of the forceps. These cases, I conceive, very properly suggest the following cautions. 1. Not to wait too long, in cases of this kind, for nature to relax the parts; and, 2. Never to divide the uterus, &c. without having first tried blood-letting.



 ARTICLE VII.

On the Use of the Radix Seneka, (Polygala Seneka Linn.) in the Cure of Croup—(Cynanche Trachealis Cullen.) with additional Remarks on the Treatment of this Disease. In a Letter from Dr. JOHN ARCHER, of Harford County, Maryland, to BENJAMIN SMITH BARTON, M. D. Professor of Materia Medica, Botany, and Natural History in the University of Pennsylvania, &c. &c. Communicated by Dr. BARTON to the Editors of the Medical Repository.

A Particular description of this disease is unnecessary, as it has been well described by several medical authors. I would only remark, that it is a disease incident to the younger part of our species; that I believe it to be a topical disease, confined to the trachea arteria, and in its advanced stage to the several ramifications thereof; that it is produced by a membrane or slough, formed of inspissated mucus, that adheres to the trachea while the more liquid parts are carried off by the air in expiration; that the first formation is near the glottis, at the beginning of the trachea; and that it gradually extends down the trachea, even to its ramifications, until breathing is materially injured, and finally suspended. I have also thought that this membrane produces irritation, from its occasioning an unaccustomed sensation in the trachea, causing spasmodic affections, so as to bring on a more difficult breathing at one time than at another.

The cure, in my opinion, consists in the separation or solution of the membrane or slough that is formed in the trachea arteria. For this purpose I have, in a great many instances, found a decoction of the *seneka* the most powerful medicine in the cure of this disease; and I am happy to tell you that I believe it may be depended on. I make a strong decoction of the root, in the following manner, viz.

℞ Rad. Senek. in pulv. crass. $\frac{3}{4}$ ss—coque in
Aq. fontan. $\frac{3}{4}$ viii. ad $\frac{3}{4}$ iv.

Of this I give a tea-spoonful every half hour, or hour, as the urgency of the symptoms may require—and at intervals a few drops, to keep up the stimulus—until it either acts as an emetic or cathartic. I then repeat it, in smaller quantities, so as to preserve the stimulus of the *seneka* constantly in the mouth and throat.

The stimulus of the seneka, in the mouth and throat, is very diffusive. Its effects extend to the upper part of the trachea; and, if the formation of the membrane has recently commenced, tend to its solution. But, if the membrane is formed, and its texture has become more firm and adhesive, the seneka penetrates to the trachea, and occasions an increased secretion, which being more liquid, and less adhesive, than the membrane, disposes it to be more easily separated and broken, so that it may be detached and discharged by the efforts of coughing, or by vomiting, when the seneka acts as an emetic. When this takes place, a cure is reasonably to be expected. And this appears to me to be the operation of the seneka, in the cure of this disease.

To be more particular. The method in which I proceed is according to the state of the disease when I am called. If it is a recent attack, I give a tea-spoonful every half hour, or hour, and a few drops at intervals, so as to keep up a constant stimulus—and in this way I have removed the complaint; but if more advanced, and the breathing more difficult, with a peculiar harsh or shrill sound, like air forcibly drawn through a small aperture, attended with a retraction of the upper part of the abdomen under the cartilages of the ribs, I then give calomel freely and frequently, and rub mercurial ointment on the throat and adjacent parts, so as to affect the glands of the throat and mouth as quick as possible. This I do that the mercury may co-operate with the action or stimulus of the seneka, and thereby hasten the separation of the membranous substance formed in the trachea.

I do not conceive that the seneka acts altogether from its emetic, or expectorant, or diaphoretic powers, otherwise other emetics and diaphoretics would cure the disease,—but chiefly from its stimulant effects, and the extension of that stimulus into the trachea.

In the above method I have succeeded in the cure of the croup even beyond my most sanguine expectations.

This last fall I have had more cases of the croup than I have ever known in our part of the country. In the majority of these cases, the decoct. senek. has succeeded without the mercury; and, probably, would have in all, had I thought it prudent to risk the event.

Before I close these observations, I would just mention that Dr. Underwood, in his work on the Diseases of Children, if I forget not, recommends gum. asafœtid. as a very powerful medicine in the cure of this disease—as an antispasmodic. But I conceive that its beneficial effects must proceed from the stimulating powers of the medicine, and the extension of the stimulus into the mouth, throat, and even the trachea, and not to its antispasmodic qualities. Indeed, it is my belief that there are several other medi-

cines that would be equally powerful with the seneka, in the cure of croup; such are the mezereon, pariera brava—and a solution of corrosive sublimate, a drop at a time, till it became emetic. But as the seneka has succeeded with me, to the utmost of my wishes, I have rested satisfied.

March 17, 1798.



ARTICLE VIII.

Two Cases of the Effects of the DATURA STRAMONIUM (Thorn Apple) on the Human Body; with a few Observations and Remarks. By BENJAMIN DE WITT, M. D. Physician in the City of Albany, Member of the Society for the Promotion of Agriculture, Arts, and Manufactures of the State of New-York; Corresponding and Honorary Member of the Chemical and Medical Societies of Philadelphia, &c.

THE datura stramonium (of Linnæus), like many other plants, has received a variety of different names in different places. In the southern states it is commonly called James-Town weed, because a number of sailors were once violently diseased by ignorantly eating the boiled plant at James-Town in Virginia. It is called French chesnut in New-Jersey, probably from the resemblance which its pod bears to that of a chesnut. It is sometimes vulgarly called stink-weed, from the disagreeable odour which it emits. But it is most generally known in this State by the name of thorn-apple. As this plant grows in abundance in different parts of the United States; as it appears to possess extremely active medicinal powers; and as we are yet but imperfectly acquainted with its operation on the human body, it is presumed the following cases, which, perhaps, may tend to throw some light upon the subject, will not be uninteresting to the medical philosopher.

On the 23d of July, 1797, at eleven o'clock P. M. I was called, in great haste, to visit a child of Mr. S——, aged about two years, suddenly attacked, and said to be dangerously ill. When I arrived, I found her apparently in the greatest agony, with a high fever, a burning heat and redness of the skin, attended with an itching eruption over her whole face and trunk of the body; but her feet and legs were paler and cooler than natural: her countenance appeared suffused and bloated: the pupils of the eyes were greatly dilated: the tongue furred and dry. Pulse weak and so frequent as hardly to be counted. She had an incessant hiccup, and frequent ineffectual retchings to vomit. Sometimes she would appear for a moment to be relieved from her anxiety, and sit silent with her eyes fixed on the ground, as if absorbed in contemplation; whilst her hands were employed in picking at her clothes, or any thing that happened to be before her, similar to those in the last stage of some fevers. Then again, she would start involuntarily, quick as if a shock of electricity had passed through her body, with an air of affright, and a loud shriek, her

limbs wreathed with convulsive motions, and her countenance and body distorted in every direction; apparently affected with great pain and anxiety. At other times, in her intervals of ease, she would sing, and sometimes laugh; but could not be made to utter a word: neither did she appear to take notice of any thing that was said to her. In short, the functions of her mind appeared to be entirely deranged. These paroxysms occurred at irregular intervals of five or ten minutes, and continued about the same period. She manifested a great aversion to fluids of every kind. When a cup of water was brought to her lips, she would instantly start from it, and sometimes relapse into her paroxysm; so great was her aversion that it was with the utmost difficulty a tea-spoonful of any fluid could be forced down her throat. I immediately suspected the cause of these violent and extraordinary symptoms, knowing that the stramonium grew in the vicinity of the house. Upon particular inquiry I found that she had been in the garden that afternoon, and some of her playmates had observed her to take some seeds into her mouth; which, from a specimen brought to me, proved to be the thorn-apple. This dispelled every doubt from my mind with respect to the cause and nature of her disorder. I exhibited an emetic, composed of a solution of three grains of tart. antimon. in divided portions, at short intervals, judging that a less powerful one would be quite ineffectual to produce full vomiting while she laboured under the violent operation of stramonium. When it operated she brought up a table-spoonful, or more, of the unripe seeds, and diffused the rank smell of that plant over the whole house. After this the child appeared to be better and easier; her pulse became somewhat stronger and slower, and her skin a little cooler.

24th. At day-break I found her in a stupor, from which she could with great difficulty be roused, resembling a person in the highest state of intoxication from spirituous liquors. She had frequent startings and twitchings of her limbs; her pulse was fuller, stronger, and slower than last evening; skin a little cooler; feet warmer; eruption stationary. Lest all the seeds should not have been discharged from her stomach, I ordered a dose of *ol. ricin.* to be administered immediately. Towards evening the oil had operated; she had somewhat recovered; stupor diminished; pupils of the eyes not quite so much dilated; eruption not so red; she looked sullen and fretful.

25th. Slept well last night; has recovered rapidly, but much debilitated; staggers a little when she walks; skin nearly of its natural colour, but rough and dry; pupils of the eyes contracted to nearly their natural dimensions; eye-lids swelled; and face rather bloated. At twelve o'clock was attacked with a high fever, a slight return of the eruption, and much disposed to sleep. She

now became thirsty and inclined to drink—directed to use lemonade. The pupils of her eyes were now contracted more than natural. Ordered a repetition of the ol. ricin.

26th. Fever continues; pulse preternaturally tense. Suspecting that some of the seeds might still remain in the intestinal canal, I administered a more powerful cathartic.

27th. Purgative had operated well; brought away a large quantity of greenish feces; no fever; pulse natural.

28th. Observed a great many vesications upon her skin, filled with a pellucid fluid; they were extremely numerous and very small, many of them not larger than a pin's head, covering her whole face and trunk of her body. Ordered a continuation of the laxatives, and the lemon-juice for common drink.

29th. She recovered strength fast; plays about the house; appetite increases; vesications drying up; dismissed.

Another case of the effects of the datura stramonium occurred in my practice on the 18th of November, 1797. A young married woman had taken a decoction of more than a table-spoonful of the dried seeds, which had been prescribed to her by an ignorant person, as a cure for some trifling complaint. Shortly after she was seized with a delirium, her tongue furred, her cheeks flushed, skin warm, and her pulse full and tense. I immediately administered six grains of tart. antimon. in divided portions. Three hours afterwards I visited her again. The emetic had operated but little. She was now in a furious mania, requiring several persons to hold her. She passed large quantities of urine involuntarily as she wandered over the floor. Pulse quick and tense: directed venæsection to $\frac{3}{4}$ xv. and administered a brisk cathartic. In two or three days she entirely recovered, without the least recollection of any thing that had happened during her illness.

The observations and remarks which naturally occur to the mind upon considering these cases, and comparing them with others of a similar nature, are,

1st. The great pain and anxiety which the seeds of the stramonium seemed to produce. Though in the first case the patient was so young as not to be able to describe its own sensations, therefore we have not that positive certainty of this being actually the case, as might have been obtained from an adult: still I have no doubt in my mind respecting it: indeed, every one who was present could not help drawing this conclusion from her countenance and actions. Her depressed eye-brows and distorted mouth; her restless condition, and the violent shrieks which she uttered, rendered it abundantly manifest. This I believe is rather an uncommon effect of the stramonium, or has not been taken notice of in the experiments and observations which I have seen upon that subject. I should be disposed to ascribe it entirely to the

large quantity which was taken, and to the suddenness of its operation, from the seeds being as yet soft and white, not having come to maturity. In the case related by Dr. Rush, in the Transactions of the Philosophical Society, no circumstances are mentioned which indicated a painful affection. On the contrary, the patient was said to be first in a *delirium*, and afterwards in a *stupor*. In that case the effects of the seeds were evidently slowly induced, as the seeds were "hard as horn, and of the last year's growth," and some of them were vomited up whole after several days. In the experiments which were made upon this plant by Dr. Samuel Cooper, in the Pennsylvania Hospital, and published in his Inaugural Thesis, no mention is made, that I recollect, of their having this effect, except a slight head-ache; but the doses which he exhibited were comparatively very small. If we find, however, that in some instances it produces inflammation and gangrene in the stomach and intestines, we can have no hesitation to believe that it should previously induce acute pain in those parts.

2dly. The convulsive motions. These, perhaps, would be a constant effect of the stramonium, taken in certain quantities, as well as some other narcotic substances; but from the comparatively few observations which we have as yet relative to the operation of this plant, appear to have occurred very seldom. The only instance which I now recollect that bears much resemblance to the present case, is that of the young rat, to the surface of whose body Dr. Cooper applied a strong decoction of the leaves. Like those the convulsive motions were alternate, sudden, involuntary, and violent. The startings in sleep, which he mentions as occurring in some of his experiments, may have been similar, but much less violent.

3dly. The apparent dread or aversion to water or fluids of any kind, which occurred in one of these cases, is another circumstance worthy of notice. A similar instance of two children who had eaten the seeds, is related by Dr. Lobstien, in the Medical Transactions.

4thly. The vesications on the child's skin after the violent symptoms subsided, are not taken notice of, that I recollect, by any one who has heretofore written upon the subject. This, perhaps, is an effect somewhat similar to the itching and redness of the skin, which is sometimes produced by opium, cicuta, &c. but much more violent. In the instance before us, I am disposed to ascribe it principally to the extraordinary quantity of the dose, producing so violent an action in the vessels of the skin, as to cause an effusion of serum under the cuticle, similar to what happens in erysipelas, and the external application of cantharides.

5thly. The large and involuntary discharge of urine is another effect which deserves attention. I recollect to have read, some-

where, of a similar case. If this should be a constant and uniform effect, the stramonium may, perhaps, in some future time, be classed with our most powerful diuretics.

From a review of the cases before us we may farther remark the extremely active stimulating powers of this plant, with respect to the human body. Its operation would seem almost to have equalled the combined force of plague, small-pox, hydrophobia, and convulsions. Like the contagion of the plague and yellow fever, it acted with such energy and violence, as at once to prostrate the powers of the arterial system. This was manifest from the weakness and quickness of the pulse, and the coldness of the extremities. Like the causes of the small-pox, measles, and other eruptive disorders, it produced an eruption, effusion, and suppuration on the skin: like the canine virus, it produced something very similar to hydrophobia; and, like many of the most powerful stimulants, it excited the muscles to irregular convulsions. In the stomach and intestines, the more immediate seat of its application, by its violent stimulus, it produced a state of great indirect debility, and, consequently, torpor and inactivity. In the brain and nervous system, it excited mania and convulsions; and in the arterial system, fever of the highest grade. In short, it exerted its powers over the whole body, scarcely leaving any part unaffected; and must inevitably have brought about the dissolution of life with irresistible impetuosity, had it not been instantly expelled from the body.



ARTICLE IX.

Medical Observations on the Virtues and Properties of the Seeds of the DATURA STRAMONIUM.

By Dr. ALEXANDER KING, of Suffield, Connecticut.

[The Editors have taken the liberty of omitting Dr. King's botanical description of this well-known plant; and in arranging the two Essays of Dr. De Witt and this Gentleman, have chosen to place this second, as exhibiting the *curative*, as that displays the *noxious* efficacy of this active vegetable.]

THE seeds of this vegetable are, so far at least as I have made observations upon it, the only parts useful in the *Materia Medica*, as they contain all the virtues of the plant, refined and prepared by the hand of nature.

These seeds, by expression, yielded a mucilaginous oil, which is cooling, anodyne and repellent, when externally applied. The virtues are pretty readily obtained by decoction, in an aqueous menstruum. Half a drachm of the bruised seeds, boiled in four ounces of water, until half the quantity is evaporated, is a suitable quantity for a grown person in twenty-four hours, to be taken in divided doses.

An extract may be obtained by boiling any quantity of the bruised seeds, in a convenient proportion of water, for the space of four hours; then strain off the liquor by pressure; evaporate over a gentle fire, without taking off the scum, until it has acquired the thickness of a syrup; then remove the liquor from the fire, and place it in a warm oven, in an earthen glazed vessel, until the aqueous parts are evaporated, and it becomes of a proper consistence for use. The dose is from half a grain to one grain for an adult.

The operation of this medicine, when taken in small doses, is moderately diuretic, and impregnates the urine pretty sensibly with the smell of the seeds. It is cooling, anodyne and sedative. It relaxes the tone of the solids, lessens the contractile force of the arterial system, and, consequently, moderates the violent attrition of the circulating fluids against their containing vessels, lowers the pulsation of the arteries, and renders the pulse slower, more uniform and equable, when excited by violent stimuli. If taken in large doses it produces the following symptoms: the first sensible effect is in the sight; there appears a preternatural dilatation of the

pupil of the eye; vision is rendered indistinct and confused; objects appear multiplied, diversified, and variously coloured; the patient complains that he does not see clearly; he cannot discern a small object, such for instance as the point of a pin or needle; he sees objects in the room which do not exist, and complains of a numbness of the head, attended with vertigo. It also affects the organs of speech. He falters in pronunciation; his tongue is rendered paralytic; or, when he attempts to put it out, imitates the motions of a person who tries to do the same in a nervous fever. The whole nervous system is disordered; various parts of the body become paralytic. From the senses it extends its influence to the mental faculties. The imagination is confused and disturbed with fear. Terrifying apprehensions perplex the mind, and impress on the countenance the image of this passion. These symptoms all disappear in the space of twenty-four or forty-eight hours, sooner or later, according to the degree in which they prevailed, without any medical assistance.

What further untoward appearances would be the effects of larger quantities taken into the stomach, I have not observed; but, probably, a total derangement of the intellectual powers, stupidity, and, perhaps, death.*

The medicinal virtues of these seeds will appear from a recital of the following cases, so far as I am acquainted with their efficacy from experience and observation.

CASE I.

A young man of about fourteen, of a tender, delicate habit, was seized with a violent pain in the head, attended with fever, sickness at stomach, and vomiting. I saw him the second day of his illness. His pulse then indicated a considerable degree of inflammation; his eyes appeared red and inflamed, wild and staring, accompanied with some degree of delirium; the pain in the head, and sickness at stomach still continuing very severe. I considered the case as an inflammation of the meninges of the brain, and treated it as such. He was bled plentifully. I directed his head to be shaved, and linen cloths, wet in vinegar, to be applied to his head, and frequently renewed: prescribed for him a cooling cathartic, and ordered his feet and legs to be bathed in warm water, and put him on the use of cooling drinks and medicines.

Visiting him on the third day of his sickness, I found his pulse not so hard as before the first bleeding, but very quick; the purge had wrought, and procured some abatement of sickness at sto-

* I have known an instance of a young lad who, incautiously, ate these seeds, which produced a distorted eye, that remained ever afterwards.

mach, but no mitigation of the other symptoms. Alienation of mind was more apparent: he was constantly picking the bed-clothes, or pointing at imaginary objects, which he pretended to see about his bed, and muttering to himself. I repeated the bleeding, prescribed alvine injections, and continued the cooling regimen and medicines.

On the fourth day of his illness I found him no better; his pulse weaker; the delirium had considerably increased, and he was sometimes raving. I then applied an epispastic to the crown of his head, and pursued the plan before prescribed.

On the fifth day I found all the symptoms of phrenzy increased, attended with convulsive spasms and twitching of the nerves. His hands and feet began to feel cold, and his pulse was evidently sinking. He had slept none after the first night of his illness to this time; the pupils of his eyes were dilated to nearly twice their natural dimensions; a dissolution appeared to be fast approaching, and death at no great distance.

The plan I had pursued did not avail my patient, or procure him the least advantage, or produce any mitigation of the threatening symptoms. I determined, therefore, to try the effects of the stramonium, and accordingly prepared the decoction in the manner before recited, and directed the attendant to give him a tea-spoonful every half hour.

The next morning found that he had slept about fifty minutes in the course of the preceding night, which was the first appearance of rest since I saw him; his hands and feet were rather warmer, with a small degree of moisture, which before had been quite dry and husky; the delirium still continued, but not so violent and outrageous. I continued the decoction, and directed the nurse to repeat it oftener.

The next morning found the fever and delirium evidently abated; there also appeared a plentiful discharge of urine, strongly impregnated with the smell of the seeds.

On the following day, he appeared perfectly calm and composed, after a quiet night's rest; but complained of a pain in his breast, attended with a cough, and other peripneumonic symptoms. A blister, applied to the part affected, presently removed that complaint, and he soon recovered.

CASE II.

A man of robust constitution, and sanguine habit, about twenty-six years of age, after drinking pretty freely, was seized with a slight paroxysm of the apoplexy, which was followed with a cold fit or fever, attended with a violent pain in the head, and delirium. On the second day I found him delirious, with an inflammation

of the brain, or rather the meninges. I bled him largely, so that he even fainted in a recumbent posture, which was succeeded by another partial paroxysm, similar to the first. I put him on a course of medicine, nearly the same as prescribed in the former case. The next day I found no abatement of the symptoms: he had slept none for two nights past, and was quite outrageous. I then prescribed for him a decoction of the seeds of the datura stramonium, and directed the nurse to give him a tea-spoonful every quarter of an hour. I found, on visiting him the next morning, that soon after taking the decoction, he became calm and composed, and went to sleep. I continued the same medicine through the course of the fever, which lasted about seven days, except one day, in which I purposely omitted the use of it, in order fully to satisfy myself as to the operation of the medicine. On that day the delirium returned, and he slept none the night following. The next morning I had recourse to the decoction as usual, and it produced the same salutary effects as before.

In this case I had a fair opportunity to observe the action of the medicine in an early stage of the disease, which was cooling, anodyne and sedative.

I have used it in two other cases of the same disorder with equal success, which it will be needless particularly to relate.

I have also prescribed the same decoction, in one instance, without any advantage; but in that case a general torpor and insensibility had taken place before I saw the patient, and he died the next day.

This medicine has been recommended as a remedy for epileptic fits; in which disorder I have sometimes prescribed it, but I cannot say with any great success. I have found steel a much more efficacious medicine in epilepsy.

According to my observation, a decoction appears to be the most eligible form of exhibiting this medicine, as the physician (and none but such ought to use it) can determine with more precision the proper dose, and will be able to regulate its effects with a greater degree of exactness than in any other form.



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 ARTICLE X.

OUTLINES OF MEDICAL GEOGRAPHY:

Being an Inquiry how far Calcareous Soils and Strata counteract the septic Exhalations which occasion Distempers of a febrile or pestilential Type. In a Letter from Dr. MITCHILL, F. R. S. E. Member of the Legislative Assembly, and Secretary of the Agricultural Society of the State of New-York, Professor of Chemistry in Columbia College, Fellow of the Societies of Philadelphia, Boston, &c. &c. to JAMES HAWORTH, M. D. and Radcliffian Travelling Physician from the University of Oxford, dated November 4, 1797.

IF there is any solidity in the observation made in my letter to Dr. Beddoes of September 15, 1797, concerning the comparative mildness or rarity of pestilential and febrile distempers in countries underlaid with extensive strata of superficial lime-stone, as happens in some parts of the United States, then England ought to exhibit something of the same kind, in the counties where chalk is very prevalent. I now set myself down to recollect what I remarked about calcareous earth in travelling from Dover to London, and during a walk I once took from London to Oxford and its environs, Woodstock, Blenheim, and back again.

The chalk cliffs in the neighbourhood of Dover, are talked of by all persons who navigate the Channel up and down, or who barely pass from any of the opposite ports of France to this part of England. It has not been so generally noticed that the land from Folkstone, in Kent, or thereabout, along by South-Foreland, and almost to Deal, together with good part of the Isle of Thanet, including both Ramsgate and Margate, has a chalky bottom. Indeed, with very little interruption, the calcareous material prevails to a very considerable extent on both sides of the road from Dover to Canterbury, and thence to Rochester. In short, I may say it extends westward quite to the county of Surry, and passes into it by a tract almost as broad as the distance from Deptford to Westminster. This is the most healthy part of the country, as may appear by comparing it with the unwholesomeness of Oxney Isle, Romney Marsh, and the Isle of Sheppey, where not chalk, but siliceous sand, flint, clay and loam constitute the principal part of the soil. (See the map prefixed to Mr. BOYs' General View of the Agriculture of the County of Kent. London. 1796.)

The chalk continues through part of Surry, Berkshire, much of Oxfordshire, quite into Gloucestershire, and prevails extensively in Buckinghamshire, Middlesex, and somewhat in Essex. Oxfordshire, though situated so far inland, is famous in many places for its petrifications and incrustations of calcareous earth. Through this cretaceous land run the *Isis*, the *Charwell*, the *Windrush*, the *Evenlade*, the *Thames*, and, according to Dr. PLOT's enumeration, seventy other streams of inferior rank, whose collected waters pass through the enumerated chalky tracts to London, and the greater part of the distance thence to the sea.

The latter of these rivers, and some others which fall into it below, are prettily noticed by POPE in his poem of Windsor Forest.—

“ in ancient times we read,
Old Father Thames advanc'd his reverend head:
His tresses dropp'd with dews, and o'er the stream
His shining horns diffus'd a golden gleam:
Grav'd on his urn appear'd the moon, that guides
His swelling waters and alternate tides;
The figur'd streams in waves of silver roll'd,
And on their banks *Augusta* rose in gold;
Around his throne the sea-born brothers stood,
Who swell with tributary urns his flood;
First the famed authors of his ancient name,
The winding *Isis* and the fruitful *Thame*;
The *Kennet* swift, for silver eels renown'd;
The *Loddon* slow, with verdant alders crown'd;
Cole, whose dark streams his flowery islands lave;
And *chalkey Wey*, that rolls a milky wave;
The blue transparent *Vandalis* appears,
And gulphy *Lee* his sedgy tresses rears;
The sullen *Mole* that hides his diving flood,
And silent *Darent*, stain'd with Danish blood.”

The inferences to be drawn from these geographical facts are two. 1st. That an extensive body of chalk, or calcareous earth, of very considerable breadth, tinctures, with its peculiar qualities, the soil of England from the German Ocean westward, to the hills which separate the waters of the Severn from those of the Thames in Gloucestershire. 2dly. That the greater part or all of the streams falling into the Thames, run through a country charged with calcareous earth, and, consequently, must be considerably impregnated with that material.

With regard to the first point, if the *septic gas*, or *effluvia*, is, as experiments lead us to believe, of an acid nature, in that

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ease it ought not to be very abundant or long prevalent as a cause of epidemic, malignant, and pestilential distempers, where the land is composed, in a good proportion, of calcareous earth; or, if in any place, or at any time, it should happen that febrile disorders of greater or less malignity or inveteracy break out, this ought to happen in consequence of too much acid present for the chalk or lime to neutralize. On looking over the first authority that comes in my way, MARTIN's Natural History of England (edition published in 1759), I find Surrey denominated generally "a pleasant country;" Middlesex commended for its "exceedingly healthful air;" Berkshire called "one of the most pleasant counties in England;" Buckinghamshire said to possess an air generally good, especially on the Chiltern Hills; and though the vale is dirty, "not so unhealthy as many other low lands in England, THE SOIL BEING MARLE OR CHALK;" and the eastern part of Gloucestershire, where the Evenlade and Windrush rivers arise, though less fertile than the western part of the county along the Severn, and more exposed to wind and cold, "makes amends by its healthfulness."

The healthfulness of Oxfordshire is almost proverbial, and the judicious choice of King ALFRED has long been commended for pitching upon so wholesome a spot as that where the beautiful city of Oxford stands, as a seat for the muses. This has been considered as very strikingly manifested by the two following circumstances. 1st. An observation of long standing, that although the small-pox is as frequent there as any where else, the effects of it are seldom fatal; and, 2d. That when the pestilence, in 1665, was spread in a manner over the whole kingdom, though the court, both houses of parliament, and the terms, were held in the city of Oxford, yet the plague, notwithstanding, was never there at all. (i Martin's, &c. p. 368.)

On the other hand; where, along the fenny hundreds of Essex, the joint operation of the current of the Thames, and the tides of the ocean, have brought together great bodies of sand and clay, that had been diffused through the water, and been deposited by it, together with all such remains of animal and vegetable matter as constitute the deep mould of those tracts, the country abounds thereabout with septic exhalations, which are very injurious to the health of the inhabitants, where the neutralizing power of calcareous earth or chalk is wanting: and, as far as I can judge, a deficiency of the same material enters deeply into the explanation of the unhealthiness of the fens of Lincolnshire, and the adjoining hundreds of Fleg and Marshland, in Norfolk.

It must be observed, however, although chalky and calcareous soils are thus destructive of that kind of air or vapour which produces agues, fevers, &c. that it does not follow, by the rule of

contraries, that all sandy, loamy, gravelly, and clayey soils must be unhealthy. This may, however, be remarked, that in the United States of America, the most sickly parts are the tracts along the Atlantic, where the land consists, in pretty much the whole range, from New-York to Florida, of silicious sand and clay, variously mingled, and tempered with more or less of mould, without any considerable admixture of calcareous earth; and this, when it occurs, consisting principally of concretions of marine shells, dug up in some parts of Virginia and the other southern States. As to our cities, the site of New-York is a sandy loam, or gravel, except that part where the plague has usually prevailed hitherto, which is built upon salt meadow, miry swamp, and rotten trash. Philadelphia stands partly upon a sandy, and partly upon a stiff loamy or brick-earth, very impermeable to water, and destitute of a sufficient proportion of calcareous earth to keep down and attach pestilential fluids. Though, of both these cities, it may be remarked, with truth, that though they were built upon a bottom of *lime*, or *chalk itself*, there are local causes enough to engender the worst forms of distempers, as happened at the famous assizes in Oxford, where the filth, accumulated around the wretched criminals in prison, generated pestilential matter enough to poison a considerable number of the court and attendants.

As far as I can comprehend the subject, the general conclusion is this: Countries abounding with calcareous earth are mostly free from the ravages of wide-spreading epidemics, by reason of the power that material possesses of neutralizing the acid of putrefaction; though, from particular local causes, pestilence may be manufactured in places thus favourably circumstanced: while those places which are most remarkable for the prevalence of malignant and pestilential diseases of that kind, consist of a soil through which chalk and lime are scantily scattered. England affords abundant proof of the former, the United States of the latter, observation.

To proceed now to the second point: The numerous streams of water whose united body forms the Thames, run principally, it was said, through a tract of country plentifully furnished with chalk. The form in which this calcareous earth is most prevalent is that of carbonate, or in combination with fixed air, and capable, in many places, of being burned to quicklime: though, doubtless, where the septic (nitric) acid exists, it unites with the earthy basis into calcareous nitre. There is, unquestionably, somewhat of a muriate of lime, especially below London bridge, and the whole distance thence through the brackish and salt-water to the ocean. And perhaps there may be, in some places, a combination of the sulphuric acid with the calcareous matter into gypsum. The small quantity of gypsum which exists there, and if much did exist,

the very trifling proportion of it which water is capable of dissolving, leave very little to be said concerning it here. The muriate of lime is there probably in too small proportion to be matter of any moment any where above the flow of the salt-water; and though, as CAMDEN says, the river swells as high as Richmond, which is sixty miles inland, (Britannia. 187.) with the tide, yet the salt reaches not a great distance from Gravesend.

The septite of lime is soluble in water; but as it is also a nutritive ingredient in manures, and easy of resolution into its constituent parts by plants, it is presumable that a large proportion of what is formed of that compound undergoes decomposition on the soil where it is produced. The carbonate of lime, then, or common mild chalk, is the material upon which the streams of water, in the case before us, must principally act.

Water may work upon this mild calcareous earth in two ways: 1. By acting as a menstruum, or jointly with some substance which is a menstruum, and *chemically* dissolving it; and, 2. By *mechanical* attrition, wearing it away, reducing it to fine particles, and while it is diffused and floating through the liquid, carrying it down in its proper form to be mingled and deposited with the various matter of intervale spots, alluvial shores, and secondary islands.

It is hard to determine what quantity of calcareous earth is brought down in these two modes, from the adjacent counties into the bed of the Thames, and hurried along with his stream towards its disembogement. When all circumstances of showers, rains, freshets, and the unceasing atteration of the streams along their channels, are taken into the account, the quantity would seem to be very considerable. This chalky substance, whether dissolved in the water, or diffused through it, cannot fail to modify and influence it remarkably; in an especial manner contributing to fertilize the low lands in the neighbourhood of the river which it visits or overflows.

Thus the septic and other acids with which the Thames water was charged, are, in a great measure, or perhaps quite, neutralized by the calcareous earth, before it reaches London. The quality of the water there will be, in a good degree, determined then by the materials furnished by that city. The acid of putrefaction and other acids running into it from the sewers, will, under the existing regulations, be neutralized by the refuse alkaline matter of house-keeping, and other consumptive processes; and the potash and soda thrown away in soap, &c. seem to more than counterbalance their opponents, and give a preponderating influence to the alkalies. Hence evidently proceeds the boasted softness of the Thames water for the washing of linen; for enabling the London dyers to strike their bright and lasting colours; for keeping so well at sea as it does; and, probably, enabling it to extract, in a very com-

plete manner, the substance of malt to form their excellent porter. Is not all this confirmed by the fact known to navigators, that the Thames water, after long keeping, deposits, within, a stony sediment on the bottoms of the casks?

So much for the waters of the Thames, and the chalky regions through which they run. The facts are very striking and interesting, but they are not the only ones of the kind.

When I was in France, I once passed up the river Loire, partly by land, and partly by water; but, at Angers, turned off to the left on my rout to Paris. I therefore did not travel through that fine tract of country watered by the Mayenne, the Indre, and Upper Loire, which abounds in the soft calcareous stone, that by bare exposure to the open air, becomes highly charged with septic acid. Nor did I visit Saumur, the center of a district of calcareous earth, in which the acid of putrefaction is so abundant as to require nothing but an addition of pot-ash to turn the calcareous nitre to salt-petre. If the philosophers of France would inquire into the circumstances with a due degree of attention, I am persuaded they would find that the lime-stone, which, by combining with this acid, gives to the soil much of its fertility, prevents, at the same time, the rise of its pernicious vapours into the atmosphere. (FOURCROY's Speech to the Council of Ancients, Med. Repos. No. I.—3 Diction. Univ. de la France, Artic. SAUMUR. p. 64, where the salt-petre refined there is called the best in France.)

From the manner in which Mr. HOUSEMAN expresses himself in the Journal of his late tour through England, there is strong reason to believe that the salubrious air, for which Matlock in Derbyshire is so famous, has a connection with, and is partly dependant upon, the lime-stone-rock, abounding in the valley through which the river Derwent there runs (Monthly Mag. for March, 1797. p. 203.)

But that fertile tract of land, THE CARSE OF GOWRIE, in the county of Perth in Scotland, which is reckoned to possess a climate more mild and favourable to vegetation than any part of that kingdom, affords *direct* evidence of the healthiness consequent upon using lime as a manure. The soil consists chiefly of rich clay, loam, and sharp gravel; and the inhabitants, until the year 1735, used to be subject to the ague. Then one or two of the principal proprietors undertook, by draining, summer-fallowing, and sowing grass-seeds, to improve their estates. Accident led them to a discovery of the efficacy of lime on that soil, from observing the powerful effects of *some old lime rubbish of decayed buildings*, when spread on the corner of a field. The liming their lands then gradually came into use, and has since been generally adopted; the consequence of which is, the AGUE HAS LONG

AGE DISAPPEARED. Here seems to have been a beautiful experiment made upon about ninety-six square miles of country, where the septic steams that formerly gave the people agues, are now attracted by the lime and turned to calcareous nitre, while increased productiveness of the land, and greater wholesomeness of the air, continue to be the happy consequences. (Donaldson's General View, &c. p. 12. and seq.) Some judgment may hence be formed concerning the power of art in changing the face of nature. What a grand reflection, that an inconsiderable quantity of powdered lime strewed over the land, should thus coerce the matter of pestilence, and controul the operations of the atmosphere!

I shall bring this letter toward a close by inserting some facts of the same kind, afforded by Sicily. *Calcareous earth* abounds in the neighbourhood of Palermo, in the form of *lime-stone*, (2 Swinburne's Travels, p. 199.) *stalagmites*, (p. 201.) and *breccia*, (p. 203). On the road thence to Girgenti, it exists in the form of *marine concretions*, *talk*, *gypsum*, (p. 227.) *chalky stones*, (p. 243.) and *rocks*, (p. 256). In the neighbourhood of this place, the ancient Agrigentum, *marine exuviae*, constitute good part of the lower strata of the hills, (p. 258.) and many of the buildings are constructed of a conglutination of sea-sand and *shells*, (p. 268). On the road from Alicata toward Syracuse, some of the cliffs bordering on the Mediterranean Sea, are composed of a *greenish marble*, full of sulphur and *solid rocks of gypsum*, (p. 284). And on the road to Messina, the traveller meets with lofty broken mountains, composed of marble and various sorts of calcareous stones, (p. 358.) and with high calcareous *cliffs of red and white marble*, (p. 361). To this basis of calcareous earth, which is now covered over, to great extent, by lava and other volcanic productions, that remarkable island owed formerly, and still owes a great share of its wholesomeness and fertility. The manner in which this was effected, seems visible on the *Leontine Plains* and their vicinity. The town of Lentini, though situated on a spot so exceedingly productive of vegetables, is, however, unhealthy during summer and autumn, on account of its nearness to the lake of Biveri, and a great space of country filled with lakes and ponds. The hills which inclose it on the east side, afford great quantities of saltpetre; and people are constantly employed in scraping it off the walls. Do not the vapours of the low grounds which infect the atmosphere there, attach themselves to an alkaline basis as soon as they meet with it, and form the nitre? Is not the formation of the nitre, in such circumstances, a tolerable indication that a prevalent ingredient in the air of that sickly region, is the septic (nitric) acid vapour exhaled from the place of its production, the marshes? And is not the effluvium which exhales from the head

of the port of Syracuse formed in like manner, by chemical union of the septon (azote) and oxygene of substances undergoing putrefaction there; which, volatilized by the heat of summer, vitiates the air and endangers the lives of the inhabitants? And was it not a miasma of the same nature and composition, which caused that malignant fever, or plague, which destroyed the Carthaginian army encamped in the fens, when they came to rescue this city from the Romans?

But why do I take the tour of Europe to establish the fact of the salubrity of countries consisting of calcareous earth, or underlain by it? Nearer home, the island of Bermudas and its neighbouring isles, furnish abundant proof of the same thing. The whole cluster consists of calcareous matter, apparently formed of the fragments of marine shells compacted into a porous and friable sort of white stone. This neutralizes the acid of their rain water, and all other acids, so effectually, that a generally pestilential state of the atmosphere is unknown there; and the Somers' islands have become famous for the wholesomeness of their climate, and the longevity of their inhabitants. Yet even there, damaged provisions, excessive use of salt meat and fish, wheaten flour, and meal of maize, both soured by keeping, sometimes excite considerable febrile sickness, which, however, is remarked never to spread by infection; the septic acid evolved from meat and meal being checked by the lime as soon as it is wafted abroad, but being still capable of working its accustomed mischief in many of the places and substances where it is immediately produced.

One paragraph more and I shall conclude. Read the hypothesis of Linnæus (1 Amænitat. Academic.) on the cause of intermittent fevers, and you will find a collection of facts to prove their connection with argillaceous earth, or clayey soil. Of this he was so well satisfied, that he concluded that attenuated particles of clay taken into the body with food and drink, entered the blood, stuck in the extreme branches of the arteries, and brought on, as a true proximate cause, the symptoms of the disease. (Hypothesis nova, § v.) The sensible inquirer will find, in his fourth section, an enumeration of all the parts of Sweden famous for intermittents and strata of argillaceous soil; and the authority of Mr. Sandel, quoted as an eye-witness of the same coincidence of clayey bottoms and intermittent fevers in Pennsylvania. The facts I take to be indubitable. Linnæus has reasoned upon the subject, by considering argillaceous earth alone. I have viewed it in contrast with calcareous earth, that, by embracing a wider range of facts, the operation of the latter, in tempering the former, may be the better comprehended. Whether my theory is better founded than that of the Professor of Upsal, the experienced and candid will judge.

I thank you for your copy of old MAYOW. That this man, who was a London physician, and a fellow of All-Souls-College, his brilliant discoveries, and his book which contains the account of them, should all be forgotten, in his own country as well as abroad, within less than one hundred years, so effectually that FRANKLIN could never have read his explanation of water spouts, nor SCHEELE his detection of dephlogisticated air, nor GIRTANNER his manner of accounting for muscular action, nor any body else, what he has left on respiration and on the condition of the unborn fœtus, and unhatched chick, are among the most singular occurrences in the literary history of the 18th century.

Wishing you a prosperous voyage, and a happy meeting with your friends, and with ALMA MATER, I finish my letter, by assuring you, &c.

SAMUEL L. MITCHILL.



ARTICLE XI.

*Second Letter from Dr. PRIESTLEY to Dr. MITCHELL, Professor
of Chemistry at New-York.*

DEAR SIR,

I AM very glad that your *Medical Repository* is extended to subjects of general philosophy and chemistry. Had I known this before, I should have taken the liberty to send you an account of some of my late experiments, especially those which have for their object the decision of the question between the phlogistians and the antiphlogistians. I have not yet seen any part of the work, but shall not fail to procure it the first opportunity, and consider the history, which you say it contains, of the controversy between me and my opponents. In the mean time, I beg you would communicate to the publishers the following account of an experiment which I wish Dr. Maclean, and other advocates of the new theory, to consider, and endeavour to explain on their principles. Our common object is the investigation of truth; and surely a question of this nature, purely philosophical, may be discussed in the most amicable manner. The pamphlet in which I replied to Dr. Maclean and Mr. Adet, I presume he will answer in a separate pamphlet; and having waited for it some time, I am now in daily expectation of it.

An argument on which, in my late publication, I laid some stress, is, that when inflammable air is procured by the solution of iron in diluted acid of vitriol, there is no addition of oxygen found in the vessel in which the process is made, which ought to be the case if the inflammable air came from the decomposition of the water; and that *finery cinder*, called, by the antiphlogistians, *black oxyde of iron*, cannot be proved to contain any oxygen at all, though, according to their principles, it constitutes about one-third of its weight. I have, since this, made a similar experiment with *zinc*, which is another metal, by means of which inflammable air is easily procured, and which I think rather more decisive in favour of my hypothesis; which is, that the inflammable air comes from the *metal*, and not from the *water* in which it is dissolved; and, therefore, that metals are compound substances, consisting of phlogiston and peculiar earths, and that water is not decomposed.

On throwing the focus of a burning lens on a quantity of zinc in common air, confined by water, in a glass vessel, the first effect

is the production of *flowers of zinc*, which make a beautiful appearance, by their dispersion within the vessel; and during this part of the process the air is diminished, the pure part of it, no doubt, entering the calx, while the phlogisticated part remains unaffected. After this, the application of the heat being continued, there is an increase of the quantity of air by the production of inflammable air; and instead of flowers of zinc, a *black powder* arises, and adheres to the inside of the vessel, and with care may be collected.

Now, since inflammable air is produced, the antiphlogistians must say, that part of the water over which the experiment was made, was decomposed. But then I ask, where is the oxygen which, according to them, constitutes the far greater part of the water? I cannot find it any where. The water is entirely free from acidity, and the air expelled from it afterwards is even less pure than that which it yields before the process. And if I examine the *black powder*, by heating it in confined common air, it becomes a whitish substance, the air is diminished, and rendered in a considerable degree impure; whereas, if it had contained any oxygen, the quantity would have been increased, and it would have been purer than common air; as when *red precipitate*, or *minium*, is treated in the same manner. It is evident, therefore, that it contained no oxygen, but a quantity of phlogiston, on the expulsion of which, and the imbibing of pure air, it became flowers of zinc.

This experiment is rather more decisive than the similar one with iron, because the black powder to which zinc is reduced can be affected by heat in common air, which finery cinder cannot.

I have been in expectation of hearing from Mr. Barthollet, and the other chemists in France, to whom my first publication on this subject was addressed; but as there is now no communication between this country and that, I shall be glad to proceed in the discussion of the question with Dr. Maclean and other chemists on this continent. I shall attend with candour to any thing that they shall suggest, and freely acknowledge any mistakes or oversights into which I may have been betrayed: but I hope it will not be taken for granted, that where the results of experiments are differently reported by the French chemists and myself, they are always in the right. An impartial judge will see with his own eyes, and if he have not the means of doing this, he should not decide at all.

I beg to hear from you oftener,

And am, with great respect, dear Sir,

Yours sincerely,

J. PRIESTLEY.

Northumberland, June 14, 1798.

P. S. Please to return my compliments to Chancellor Livingston. I shall be glad to hear the result of his experiments on gypsum. I am watering some clover with a solution of gypsum. When I see the effect, compared with the common method of using it, I will inform you. I suspect that it acts as a *stimulus* only. I once thought it might act by attracting moisture. If so, pounded glass, &c. may be useful. I shall try that, and other things.



ARTICLE XII.

ANSWER to the TWO LETTERS from Dr. PRIESTLEY.

To JOSEPH PRIESTLEY, LL.D. F.R.S. &c. &c.

DEAR SIR,

New-York, June 20, 1798.

FINDING, by your letter from Northumberland, of January 18, 1798, (see Repository, vol. i. No. 4. p. 521.) that my attempt to accommodate the disputes among the chemists, concerning phlogiston, had not, in your opinion, been successful, I once more beg your indulgence a few moments, while I state some additional reasons to shew that it will answer as fully as I promised myself.

You object to the conclusiveness of the experiments with the colypyle, which I adduced to shew that red-hot charcoal could decompose boiling water; the oxygene of the water uniting with a portion of the carbone into carbonic acid gas, and its phlogiston (hydrogene), with a portion of the oxygene of the atmosphere, into the oxyd of phlogiston (water). Your objection is grounded upon the extinguishment of ignited charcoal by steam, and upon the failure of Mr. Wilkinson to increase the flame of his furnaces, by adding the colypyle to the common bellows. But these do not appear to me in the light of objections. In order that heated water should be decomposed in the experiment with the colypyle, it is necessary that the charcoal be exceedingly hot; and this heat must be produced by decomposition of the fuel, of oxygenous gas, or some other source, and not be afforded by the water. On the contrary, as water, which is a liquid, undergoes, by this operation, resolution into its component parts, and turns to gases, heat ought to be absorbed in greater quantity than it is evolved; and, therefore, unless caloric is evolved, and in sufficient quantity too, from some other source than the water, the ignited charcoal will certainly be cooled so far as to be extinguished by it. The phlogiston (hydrogene) of water is blended with it in a way very analogous to the union of the same ingredient in iron. Water, like iron, is an inflammable substance in certain circumstances; but both require a supply of heat *ab extra*, to make them burn. Your father-in-law was, therefore, injudicious in having spent his money in making such an experiment. With a little more consideration he might have foreseen the experiment would be unsuccessful. He might almost as well have expected to have blown

up the flame of his forges by the phlogiston of the iron as of the water. To evolve heat enough to decompose a great quantity of water, would unavoidably require the consumption of a proportionally great quantity of fuel. The iron-master you mention ought, if there is any reality in my interpretation, to have sunk a part of his capital, in prosecuting this project of kindling fire by the colypyle. If I was to attempt a nice distinction, I should say water and iron were rather *combustible* than *inflammable*. The reason why oil burns more easily than water, is, that its phlogiston (hydrogene) is in a more separable state; much water is formed during the process of its junction with oxygene as it burns.

As to the current of air which you observe accompanies the current of water from the orifice of the pipe, I am disposed to think it is not the chief-cause of the phenomena to which I allude. The spot of ignited charcoal is brightest where the hot steam touches it, and not in the spaces round about, where, according to your interpretation, the brightest appearance ought to take place. The very spot covered by steam on the surface of a fire-brand, or burning backlog, is not "extinguished as soon as if it were dipped in cold water;" nor is there any blackness or sign of extinguishment observable, as long as a sufficient heat is kept up. If the heat be considerably abated, the water will indeed put out the fire; but this is no objection to the accommodation which I propose; on the contrary, it is one of the natural consequences of it.

If, in the experiments you have made upon metals, all that you have tried, when revived, imbibe great quantities of inflammable air, I have only to say, in such cases, the thing you denominate a metal, quick-silver for instance, is not in that case a *simple* body, but a *compound* of mercury and phlogiston; and so of all the rest which are found to contain it. You would not, however, thence argue, *per saltum*, that it must be an ingredient in such metals as contain it not, or in which it cannot be detected. I do not see the propriety or use of solving the question by analogy.

On the composition of finery cinder, you and I are nearly agreed, as I believe it to consist of *oxygene*, *phlogiston* (*hydrogene*), and *iron*, and you think it is composed of *water* and *iron*. You allow, also, that phlogiston is essential to the constitution of inflammable air—so do I.

The experiments deemed so conclusive by most modern philosophers, on the constitution of water, and doubted or denied by yourself, put an end to all discussion on that subject, until both parties shall agree upon the facts. The antiphlogistians say it consists of hydrogene (phlogiston) and oxygene, in certain proportions: you say these two substances, by their union, form nitrous acid. There must be a mistake somewhere. Without pro-

nouncing absolutely on which side it lies, I have, in my speculations, proceeded upon the supposition, that, in this case, the English, French, and Dutch experimenters were right.

A reform in the language of science proposed to philosophers for their adoption, required some apology, and particularly from me. I offered what I thought a sufficient excuse for the innovation. It has always seemed to me a peculiarly difficult, and, at the same time, important task, to fabricate a scientific language as it ought to be. The notions we have of the primary particles, or elementary atoms, of which natural bodies consist, so much resemble abstract ideas, that, after the manner of these, they may be expressed by something like generic terms, only with this difference, that in such cases as the present, the words or names employed must have exact and unambiguous meanings. It has been fashionable to derive them from the Greek language. To this I have no objection. Perhaps it is the most proper. The neuter adjective, with an article prefixed, has a peculiar elegance and significancy. If the ancient terms, τὸ καλόν be translated to mean that which is beautiful to the eye, τὸ πρῶτον, what is becoming in manners; τὸ καθικόν, what is right in morals, &c. then the modern phrases, τὸ σπῆλον, may be used to signify what peculiarly disposes bodies to rot, τὸ φλογιστικόν, what makes them burn with blaze, &c. &c.

According to these philological ideas, I proposed, in 1795, to strike out *azote* from the nomenclature, and take *septon* in its place. This altered the terms considerably, as you observe:

1. Τὸ ΣΗΙΤΟΝ for Azote, Nitrogen, Alkaligen, &c.	2. Septous Gas for Atmospherical Mephitis, Azotic Gas, Phlogisticated Air, &c.	3. Gazeous Oxyd of Septon, or Septous Oxyd, for Dephlogificated Nitrous Air.
4. Septic Gas for Nitrous Gas.	5. Septous Acid for Red or smoking Nitrous Acid.	6. Septic Acid for Pale or oxygenated Nitrous Acid.
7. Septates } of Potash, Lime, Septites } Soda, &c. for Nitrates } of, &c. &c. Nitrites }		

This amendment was proposed, that the history of putrefaction, and the doctrine of pestilential fluids might be better understood.

Last year I proposed a further reform; to expunge *hydrogen*, and substitute *phlogiston* in its stead. This makes also a considerable change in terms; for instance, it is proposed to adopt

1. Τὸ ΦΛΟΓΙΣΤΟΝ instead of Hydrogene or Basis of Water.	2. Phlogistous Gas instead of Inflammable Air or Hydrogenous Gas.	3. Oxyd of Phlogiston instead of Water or Oxyd of Hydrogene.
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4.	5.	6.
Phlogistons and Phlogistic Acids.	Phlogistates, } &c. Phlogistites, }	Phlogistures of Iron, Zinc, &c. instead of
Probably no such compounds in nature, oxygene being capable of uniting with phlogiston!	No such things known.	Combinations of Phlogiston with the peculiar earths of those metals, &c.

to the point of oxyd, and no further. Here it stops short. A curious and wonderful provision, which prevents water from receiving a surcharge of oxygene, and being turned sour in all cases!

And this amendment is proposed to render the history of combustion more easy to be comprehended, and to explain away the differences and difficulties about the principle of inflammability.

How far the project will answer the intended purpose, the men of truly learned, logical, and scientific heads must decide. For the same reason that azote and hydrogene were faulty terms, I consider oxygene to be so too. There must also be a reform in this article of the Nomenclature. But I offer nothing about it yet.

The new experiment, mentioned in your letter of the 14th of June, 1798, on Zinc, exposed to the focus of a burning lens, is, indeed, difficult to be explained upon the antiphlogistic plan; but this, as well as the production of inflammable (phlogistous) air, during the dissolution of metals in acids, squares entirely with the explanation contained under the heads "Zinc" and "Iron," in my letter of November 14, 1797. (*1 Med. Rep.* p. 514, and seq.)

It would give me great satisfaction that we could settle the points of variance on this subject; though, even as it is, I am flattered by your allowing my attempt "to reconcile the two theories to be ingenious, plausible, and well-meant." Yet, after all I have written, I fear you will still think they *cannot* be reconciled; consequently the labour of those who undertake it is thrown away; they toil to no purpose:

In vain, tho' by their powerful art they bind
Volatile HERMES, and call up, unbound,
In various shapes, old PROTEUS from the Sea—

MILTON.

I learn, from France, that their leading chemists persist in considering the composition and decomposition of water established upon PROOF DEMONSTRATIVE; and that Berthollet is now in Italy.

Your idea of carrying on a philosophical discussion in an amicable manner, is charming; and the discussion between yourself and Dr. PRICE proves you to be a proficient in that mode.

With sentiments of high respect,

I remain truly yours,

SAMUEL L. MITCHILL.

 ARTICLE XIII.

An Inquiry concerning CUTANEOUS PERSPIRATION, and the Operation and Uses of Sudorific Remedies.

By EDWARD MILLER, M. D.

IT is not intended, at present, to devote much attention to a physiological view of the cutaneous perspiration. This would lead to great length of detail on many points sufficiently discussed in common books, and is not necessarily connected with that particular survey of the subject now to be taken. Under the term perspiration will be included all the varieties of the cutaneous discharge, as well the subtile vapour called insensible, or æriform perspiration, as the same matter condensed on the skin into visible drops, and called sweat; because both are supposed to issue from the same sources, and are only to be distinguished, as to component materials, by the latter being mixed with the sebaceous matter of the skin. The labours of Sanctorius, and others, to ascertain the quantity of fluid exhaled by this outlet, are proofs of uncommon diligence and perseverance; but are rendered uncertain in their result, and nearly fruitless, by inattention to the antagonizing function of the absorbents. Enough, however, has been discovered to demonstrate that great differences, with respect both to quantity and quality, arise from climate, season, weather, age, sex, temperament, diet, customs, manners, &c. The principal uses of perspiration seem to be, to preserve an equilibrium between the fluids and solids of the system, and, perhaps, to permit the escape of certain useless matters—to keep the skin moist, soft and pliable, in order to maintain its easy flexibility in the active motions of the limbs and body, and, at the same time, to preserve the accuracy of the sense of touch—and, lastly, to diminish the effects of increased excitement, by moderating the heat and excessive action of the skin, and thereby to preserve the whole system more cool and temperate.

There is scarcely a function of the human body, whose various conditions are so often mentioned as the cause of diseases, and the means of recovery, as the cutaneous perspiration. Physicians, and, in imitation of them, most others, ascribe to the vicissitudes of this discharge a long train of morbid and fatal consequences; and, upon the restoration or increase of it, they every day erect most important indications of cure. Much is said of the mischief of a suppression of perspiration; of the retention of morbid matter;

of plethoric accumulation arising from a stoppage of the pores of the skin, producing congestion and inflammation in different viscera; of the good or bad effects of a moist and relaxed, or of a dry and rigid skin; of the benefits of determining to the surface of the body; of the efficacy of sweating, &c. And it is well known, that in many interesting and critical states of fevers, the treatment is chiefly confided to diaphoretic remedies. But many of these opinions, however venerable for their antiquity, or the number and eminence of their advocates, appear, at best, to stand on doubtful ground; or, rather, must be pronounced inconsistent with principles now generally admitted. To such persons as have renounced those opinions, and embraced a more rational and enlightened pathology on this subject, some apology is due for this inquiry. If the writer had not reason to conclude, that a large majority of the physicians and people of this country still adhere to those opinions, and that the practical influence of them is now very extensive and pernicious, he would have declined to impose the present remarks on the reader.

Cutaneous perspiration has been supposed to bear an interesting relation to two important objects—the operation of cold on the animal system—and the critical solution of febrile diseases. By many, what is called *catching cold*, and *obstruction of perspiration*, are often indifferently used as phrases of the same import; and it is commonly believed, that the former depends upon a suppression of the usual discharge of the perspirative vessels of the skin, and may be relieved by a restoration of that discharge. It is also generally supposed, that the sweating stage of fevers is critical to the hot stage; and, therefore, that promoting perspiration is a leading object in the treatment of such cases.—Passing by other views that might be taken of this subject, it will be the chief design of these observations to oppose those two opinions, which are presumed to be erroneous and mischievous.

In stating the doctrine concerning the operation of cold on the human body, it is admitted by all to be a most productive source of disease. Sydenham did not over-rate the noxious effects of it, when he asserted them to exceed the combined ravages of war, famine, and pestilence. It is also admitted, that cold, applied to the skin, in any considerable degree or duration, will always more or less diminish perspiration; but it is denied that the inflammatory diseases thence resulting are produced by this diminution.

Great variations of the quantity of perspiration are well known often to take place without any morbid consequences. Not to mention climate and season, which may be said only gradually to produce their changes, the different states of the weather sometimes suddenly lessen this evacuation, and yet no injury ensues. The urine and

perspiration are always ready to accommodate each other; every person will acknowledge this, who attends to the comparative quantities of these evacuations in summer and winter; and at any time the comparison may be made by giving to a person large draughts of any aqueous fluid, and alternately applying cold and heated air to his skin; as it will be found that the former determines the fluid to pass off by the kidneys, and the latter by the cutaneous pores. And besides the effects of temperature, the quantity of perspiration must be materially affected by different applications to the skin. Many of the ancients, and particularly the Greeks and Romans, were in the habit of applying oil to the skin, after bathing; and the *Athletæ* rubbed a composition of oil and wax, mixed with some agglutinating and aromatic substances, over their bodies, previous to their entering on the arena. Some nations have painted their bodies all over, as the *Picts* of North-Britain, who are generally said to have received their name from this circumstance, though it was certainly common to the other ancient inhabitants of Britain; and this custom, which, in a greater or less degree, is known to prevail among the savages of all countries, is still practised by the *Indians* of this continent, who anoint their bodies with bear's grease, mixed with a clay which resembles the colour of their skins.* The *Hottentots* smear themselves all over with grease. The large use of powder and pomatum among ourselves deserves to be mentioned, though the application of them, being solely to the head, cannot be supposed to produce much effect. These several practices have been more or less in use for time immemorial; they must all of them much diminish the quantity of perspiration; and yet no injury or inconvenience is alleged to have resulted. The conclusion, therefore, is unavoidable, that this discharge from the skin may be suddenly arrested, and remain so a long time, without disease.

But it is so far from being true, that inflammatory catarrh consists in a stoppage of perspiration, that it is commonly attended with an augmentation of that discharge. In the febrile state of catarrh, the cutaneous vessels possess a fulness and activity far beyond their natural condition; this is ascertained by the greater heat, redness and turgescence of the skin. Excessive energy of action produces correspondent excitement of vessels, which must consist in excessive oscillations, and, therefore, in increased force of the circulation of their fluids; of consequence, a greater quantity of blood is sent to the skin, and a greater quantity of perspirable matter secreted.† Nothing can plausibly oppose this conclusion, but the

* Rush's Medical Inquiries, vol. i. p. 16.

† Heat of the skin, in the common temperature of the air, always denotes an increase of perspiration, whether visible or not; because the heat is proportional to the quantity of perspiration. *Vol. II. No. 1.*

doctrine of spasm of the extreme vessels, mistaken for the collapse or inactivity of those vessels, arising from deficient stimulus of heat; but that doctrine is now generally relinquished as visionary, superfluous, and improbable. A further proof that this disease does not arise from obstruction of the cutaneous pores, may be derived from the inefficacy of copious perspiration in the treatment of it.

The opinion of the morbid operation of cold depending upon obstruction of perspiration, received a deadly blow from Brown's doctrine of the effect of stimulating powers applied to accumulated excitability; upon which is erected his theory of catarrh, and many other inflammatory diseases; and which explains a multitude of phenomena of the living system, otherwise unintelligible. This doctrine is founded upon a general law of animal and vegetable life. It is exemplified by the glow of the skin after cold bathing, and the redness of the hands after holding snow or ice; by the dazzling splendour of the sun in leaving a dark room; by the pernicious effects of much stimulant food on the stomachs of famished persons; by the gangrene of frozen limbs from the sudden application of too much heat; and, lastly, by a multitude of similar occurrences in vegetable life.* When, therefore, any part of the body has been exposed to cold, it becomes liable to be much more affected by heat, or other stimuli, than before such exposure. And this luminous principle, aided by the direct or reverse sympathy existing between associated actions in different parts of the system, will, it is conceived, be sufficient to explain all the phenomena of *catching cold*, without resorting to the mysterious and fanciful doctrine of obstructed perspiration. It is not merely with the view of combating a speculative opinion, which might have been considered harmless, and undeserving of notice, that these observations are made. To relieve the imaginary stoppage of perspiration, after exposure to cold, people are often observed to betake themselves to the use of warm or spirituous liquors, to confinement in close or hot rooms, and to a weight of bed-clothes, which must all greatly aggravate the disease.

The second branch of the subject now recurs; viz. the relation which the cutaneous perspiration bears to the critical solution of febrile diseases. It is an opinion sanctioned by high antiquity, and which prevails at the present day, that sweating is the principal means employed by nature, and, therefore, to be imitated by art, for effecting the critical solution of fevers. It is not surprising that this doctrine should have become so prevalent, when it is recollected how commonly the coincidence is observed between

duced by the increase of secretion. It follows, that a defect of perspiration can only exist when the skin is cold. Darwin's *Zoonomia*, vol. ii. p. 699.

* Facts of this kind may be found in the *Botanic Garden*, part ii. p. 31.

sweating and a favourable crisis. The opinion of Sydenham, that fever is an effort of nature to discharge something noxious from the system; the lentor and morbid matter of Boerhaave, and the spasm of Hoffman and Cullen, have all had a share in attaching undue importance to cutaneous perspiration, and in supporting the critical subserviency of sweating to the hot stage of fevers. The mere coincidence, however, of sweating and crisis, cannot be deemed sufficient to establish the relation of cause and effect. And the doctrines of the celebrated authors just mentioned are too hypothetical, and too irreconcilable with numerous facts and phenomena, to admit of defence in the present state of medical science. It is to be lamented, indeed, that many who are emancipated from the hypotheses of those authors, are still enslaved by their language and practice. Error does not always yield to truth, when the foundation on which it rose is known to be dissolved.

It will not be difficult to maintain, that during the hot stage of fever, no stoppage of perspiration takes place—and that, even if such stoppage were admitted to exist, the matter of perspiration contains nothing whose retention, during that stage, can be supposed hurtful to the system, or whose elimination can hasten the critical solution.

An eminent pathologist* has placed the former of these positions in a clear point of light. He asserts, that the matter of perspiration is secreted in as great, or perhaps a greater, quantity during the hot fit of fever, than towards the end of it, when the sweat is seen upon the skin. He ascribes the dryness of the skin, in the hot fit, to the more energetic action of the cutaneous absorbents,† which re-absorb part of what is secreted, and to the greater heat of the skin evaporating the remainder. He refers the appearance of sweat, at the decline of the fever-fit, to the continued energy of the secreting vessels, actuated by all the heat of the interior parts of the system, and of the circulating blood; while the mouths of the absorbents, cooled by the external air and bed-clothes, much sooner lose their increased action. And thus, after an able discussion of the subject, he concludes that sweats are not critical to the hot fit any more than the hot fit is critical to the cold fit; that they are merely the natural consequence of the decline of the hot fit, flowing from the diminished action of the absorbents, and the diminished evaporation from the skin; and that profuse sweats, at the decline of fevers, occur more frequently than copious urine or

* Dr. Darwin's *Zoonomia*, vol. ii. p. 19 and 20.

† I am aware that the absorbent power of the skin, except when assisted by friction, is questioned by M. Seguin, and other respectable physiologists; but the facts in support of it are so numerous and decisive, that my doubts are all moved.

diarrhoea, because the cutaneous absorbents, exposed to the access of the external cool air, sooner abate of their increased action than the urinary or intestinal absorbents. The clear and decisive reasoning by which these opinions are defended, will be seen at large in the work referred to above. The doctrine, therefore, that the material cause of fevers is retained and shut up, during the hot stage, by the heat and dryness of the skin, will, at least, be considered as improbable.

But if it were even admitted, that the perspirable matter is confined within the system during the hot stage of fever, it cannot be legitimately inferred, that such retention becomes noxious, or that the elimination of it would produce the critical solution. This matter does not appear to be *excrementitious*; if that epithet be used to signify matter acrid, corrupted, or hurtful, in case of being retained in the body. On the contrary, it is bland, inodorous, and insipid, in its natural state. And, considering how incessantly and plentifully it is emitted from the whole surface of the body, it will readily be seen how inconvenient and disgusting the society and near approximation of the bodies of men would have become, if nature had not exempted it from the fætor, and other excrementitious qualities of the urine and fæces. The diminution of it by oiling the skin, and the suppression of it by painting, &c. prove that its constant and equable discharge is not necessary to life or health. There can be no doubt that its principal uses are to preserve the softness and pliancy of the skin, and the accuracy of the sense of touch; uses implying qualities very remote from excrementitious. A great proportion of it is known to be habitually absorbed in the moment of excretion, without inconvenience or injury; and no material difference has yet been proved to exist between this matter of perspiration and the moisture which bedews and lubricates all the internal membranes of the body, and which is always entirely absorbed in a state of health. It is, indeed, true, that the perspirable matter of the lungs, apparently the same as that emanating from the skin, and also that of the axillæ and feet, sometimes emit a disagreeable odour. But this depends so much upon constitutional and morbid peculiarities, or upon want of cleanliness, that it can furnish no sufficient ground to establish principles different from such as are here contended for.

If the matter of perspiration, whether æriform or aqueous, be subjected to chemical analysis, it will be found to contain nothing that, in case of occasional retention, could be likely to prove prejudicial to the system. Mr. Abernethy* found the æriform discharge from the skin to consist of carbonic acid gas, and azotic gas; the former constituting somewhat more than two thirds, and the latter

* Surgical and Philosophical Essays, part ii.

a little less than one third. Neither of these gases can be supposed to be noxious in the quantity retained by a temporary suppression of the cutaneous perspiration. Carbonic acid gas, and the materials of which it is composed, are always present, in considerable quantity, in the animal constitution; carbone is one of the principal ingredients of food; carbonic gas is plentifully found in a variety of the common fermented liquors; and it is known to be an efficacious remedy in many diseases.—Azotic gas is the most abundant ingredient in the atmosphere: in a variety of ways it gains admittance into the system, and enters largely into the composition of animal matter: and, though it may, in some instances, morbidly predominate in the body, it is certainly, on the whole, to be considered rather as a nutritious than a noxious or excrementitious substance. In examining the perspirable matter, under the aqueous form, Mr. Abernethy observed it to be a limpid, tasteless water; after evaporation of one half, it had a very slight saline taste; no change appeared after standing many days; and the mixture of some of the most noted agents in chemistry produced no visible alteration.

If the foregoing facts and reasoning are well founded, it must be concluded, that the powers and usefulness of sudorifics in fevers, have been misunderstood, and that great abuses have arisen in conducting the practice of them. Accordingly, some of the most judicious practitioners have always inveighed, with great force, against these abuses; their remonstrances have produced much conviction, and effected many salutary restraints. In opposing the common practice respecting sudorifics, it will be understood, that reference is generally had to that kind of sweating which is excited by forcible means, by the application of external, or the confinement of bodily heat, or by the internal use of substances directly stimulant. When excited by emetics, in nauseating or full doses, or by any other means which directly diminish action in the system, it is understood to be an effect of a different kind, and not liable to the objections now offered to the practice of forcing sweats.

Inflammatory, malignant, and pestilential fevers exhibit some of the most striking instances in which sudorific remedies have been recommended, and in which they have produced the most pernicious abuses. Experience, though ample and impressive, has by no means universally corrected this error. And as this country, for several years past, has been unhappily subjected to epidemic fevers of this description, not only presumed mistakes in the treatment of them, but erroneous opinions also, become interesting matter of disquisition.

The ravages of the fevers just mentioned are but too well known. Without undertaking to inquire into all the modes in which a fatal

termination of them may be apprehended, there are two which probably will not be controverted—1st. Organic derangement of some viscus essential to life—or, 2dly. General exhaustion of vital power, or the principle of excitability. The former is commonly effected by the violent impetus of the blood's circulation, determined to particular viscera, and accomplishing the fatal event by the instrumentality of congestion, engorgement, effusion, &c. and the latter, by that excess of stimulation which is the sum of all the inordinate actions resulting from the disease.

No person can deny that sudorifics, operating by means of external heat, or other direct stimulants externally or internally administered, have a tendency to produce or to aggravate such effects. The disease itself manifests a strong disposition to exert its violence in this topical derangement, even when moderated by all the remedies best adapted to allay excessive action. The delicate texture of many of the viscera is ill suited to repel an attack, from which even the strongest can scarcely escape without a fatal breach. To attempt to excite sweating by powerful stimulants, in this state of the system, without copious evacuations from the blood-vessels and bowels previously used, is as preposterous as to endeavour to extinguish flame by the pouring on of oil.

And if, instead of a fever of such destructive impetuosity, another present itself, distinguished by debility, prostration, and all the symptoms of exhausted excitability, what benefit can be expected from a remedy calculated directly to aggravate the disease, and to hurry on the fatal event? By the operation of sudorifics, not only the capillary vessels of the skin, but, through the medium of sympathetic association, all other parts of the secreting and arterial system are excited to greater action; but the smallest increase of fibrous contraction cannot be produced without a correspondent expenditure of vital power; or, in other words, a correspondent increase of the disease. With all the saving of the principle of excitability that the most cautious management is able to effect, the feeble and exhausted frame can scarcely sustain the functions of life;—why then diminish, by an exhausting remedy, what is already too scanty, and, at the same time, all-important to existence?

It is by no means, however, intended to assert that sudorifics are always useless or pernicious. On the contrary, they may be very advantageously employed to obviate the return of the cold paroxysm of fevers; they will render great service in many chronic diseases attended with general debility, and especially with cold and pale skin; they will form a remedy of great importance in many cases, by producing a transfer of excitement from the diseased part or organ, to the skin—and in a multitude of other instances not necessary to be mentioned here.

Even in fevers, sudorifics may be frequently employed with success. The cure which nature has provided for the increased exertion of the system, consists in the consequent expenditure of excitability. All cases of fevers, occurring during the prevalence of mortal epidemics, are not equally malignant; on the contrary, many instances of a mild and transient disease are observed even in the plague; and, in the yellow fever, this still oftener takes place. On this point, it is probable, the efficacy and reputation of sudorifics will be found to rest. In all such febrile cases, therefore, as are moderate in their attack, as do not, on the one hand, by the violence of re-action, threaten local organic destruction, nor, on the other, rapidly to exhaust the principle of excitability, sweating may be excited with safety, and, if used early in the disease, may often speedily terminate it with complete success. And even in fevers of greater violence, after sufficient evacuations from the blood-vessels and intestines, the operation of sudorifics may be sometimes efficacious, by gradually expending the morbid surplusage of excitability—by invigorating the absorbent function, and thereby obviating the tendency to engorgement and effusion—by the mitigation of heat arising from the evaporation—and, finally, by that agreeable softness and relaxation of the skin, which commonly attends the aqueous form of perspiration. These advantages will often more than compensate for the addition of stimulus which sudorifics impart to the system.

The efficacy of this class of remedies, in rheumatism, has been supposed to afford the most decisive and triumphant testimony of their virtue. Long experience, and a comparison of this mode of treatment with many others, leave no room to doubt the propriety of the preference given to them. Still, however, it may be justly contended, that the operation of sudorifics, in this instance, is chiefly indirect; that their usefulness greatly depends on the preparation of the system by previous remedies; and that this example affords only ambiguous ground for extending the employment of them as a general remedy in fevers.

Sudorifics, in rheumatism, appear gradually to expend the superabundant excitability, by the increased action they induce; which may be effected the more safely in this manner, as the seat and disposition of the disease give no reason to apprehend a derangement of the vital organs. It is probable this remedy does much also, in this disease, by increasing the energy of absorption. If used early in the disease, without considerable previous evacuations by bleeding and cathartics, it is said evidently to protract and primarily to exasperate the pain and other symptoms. It must, indeed, be admitted, that this remedy will often alone effect a cure, on the principle before mentioned, if the long and painful process necessary in such a circuitous plan of treatment, can be resolutely

persisted in. That it acts chiefly by increasing absorption, is rendered probable by its distinguished efficacy, when employed immediately after the inanition induced by blood-letting and cathartics; and this opinion is confirmed by observing that the most copious and repeated bleeding and purging will not readily relieve rheumatism, unless sudorifics, mercury, peruvian bark, or some other remedy suited to increase the energy of the absorbents, be speedily superadded. The same opinion is also further corroborated by the success of compression by bandages, in discussing any obstinate remainder of the disease, affecting the limbs, after sudorifics, &c. preceded by blood-letting and cathartics, had been faithfully employed.

Notwithstanding these concessions in favour of sudorifics, it may justly be insisted upon, that perspiration, carried to the extent of sweating, is generally, more or less, a sign of indirect debility. Few animals exercise themselves so as to induce visible sweat, unless compelled by mankind, by the apprehensions of fear, or the cravings of hunger. The debilitating effects of it are to be constantly observed in the human system. Witness the languor produced by exercise in warm weather, especially in persons unaccustomed to exertion in the heat; and yet more in labourers, in hot climates, after vigorous toil, and profuse sweating, through the day. Witness the pale and sickly countenances, and short lives, of workmen, whose occupations condemn them to endure high degrees of heat, as in furnaces, glass-houses, &c. The inhabitants of hot climates, who perspire profusely, are defective in vigour, and generally short-lived; the waste of excitability in the excessive and useless exertions of the cutaneous vessels, is probably one principal ground of premature infirmity, and of short life.*

That sudorifics cannot be usefully employed as a general remedy in fevers, is apparent from the fatal course pursued by many of these diseases, notwithstanding the most copious, universal, and continued sweats, spontaneously taking place. The memorable sweating sickness, which first appeared in England, towards the close of the fifteenth century, and was one of the most fatal epidemics on medical record, affords ample proof of this position.

On the whole, it may be concluded, that much of the use of sudorifics has arisen from mistaken doctrines concerning the nature

* M. Buffon made a curious experiment to shew this circumstance. He took a numerous brood of the butterflies of silkworms, some hundreds of which left their eggs on the same day and hour; these he divided into two parcels; and placing one parcel in the south window, and the other in the north window of his house, he observed, that those in the colder situation lived many days longer than those in the warmer one. *Darwin's Zoonomia*, vol. ii. p. 24.

of perspiration and of fever—particularly from the erroneous opinions, that the matter of perspiration is excrementitious; that its occasional obstruction is noxious; that it ought, as much as possible, to be eliminated from the system; and that it is only carried off in considerable quantity when discoverable by sight or touch.

It may be also concluded, that sudorific remedies, especially those of more powerful kind, are, in general, highly unsafe, and calculated to augment the violence of inflammatory and malignant fevers; and that, although they may succeed in some cases of less violence, or by a favourable concurrence of circumstances, yet they are so constantly liable to produce mischief and exasperate the disease, that the abuse, on the whole, must be pronounced greatly to exceed the use.

AFTER this attempt to restrict the use of sudorific remedies to such narrow limits, it may not be improper to recall the reader's attention to a substitute better adapted to the nature, circumstances, and varieties of fevers. This substitute is water, of various temperature, taken into the stomach, injected into the bowels, and applied to the surface of the body. Many endeavours have been made, to bring this inestimable remedy into more common use; hitherto, indeed, without much success; but it is to be hoped, that the time now approaches when its efficacy will no longer be disdained on account of its simplicity and cheapness.

The causes of fever would be infinitely less pernicious to the system, if the fever itself were repressed in its first movement, or annihilated in embryo. The cool treatment of the small-pox gives an example of this suppression of a disease; but physicians have never yet sufficiently availed themselves of the instruction it affords. Notwithstanding all the complicated maxims and rules of medical practice, the genuine treatment of fevers is simple; it chiefly consists in reducing the heat of the system when too high, and increasing it when too low; the former will allay the existing excessive action, which threatens organic destruction of the more important and delicate viscera, or an eventual exhaustion of the principle of life; and the latter will obviate such accumulation of excitability as may endanger the system from the violence of subsequent re-action. The element of heat, one of the most universal and enlivening agents yet discovered in nature, which surrounds and pervades all bodies, and regulates many of the principal circumstances of animal and vegetable life, deserves a primary attention in the management of fevers. Excepting a few precipitate cases, where the noxious cause mounts, at once, to the source of life, and suddenly extinguishes the vital principle, it will be found, that heat is the chief instrument by which the febrile poi-

son executes its destructive work. Heat and the arterial tumult reciprocally sustain the relation of cause and effect, and too often proceed in augmenting each other till life is destroyed.

It is by no means intended to undervalue the importance of depleting remedies in excessive arterial action; they are often indispensable; they deserve the highest confidence; and, especially as preparative for the use of other means, they must, till medicine advances some steps further, generally lay the ground-work of the treatment. But a great proportion of the depletion otherwise necessary might be spared by the adoption of the pleasant, simple and powerful application now recommended.

If, indeed, the sick could always avail themselves of the utmost efficacy of water, it might, perhaps, become as universal an extinguisher of fever as of fire. The use of cool air, in fevers, forms an æra in the history of medicine. The use of water, cold, tepid or hot, so as to suit the varying degrees of heat intended to be diminished or increased, may form an æra of greater importance. If too much action prevails in any part, or in the whole system, it may always be speedily reduced by water of appropriate temperature. If chilliness and torpor are found in particular parts, or in the whole, the partial or general application of water, of proper warmth, will be one of the most direct and expeditious means of procuring relief. In most fevers, the action of the sanguiferous vessels is plainly either excessive or deficient; and so close a dependence has this morbid action upon the heat of the body, that a steady and efficient regulation of that heat, lowering excess and supplying defect, would certainly bring that action to a proper point, and there render it stationary.

Cool air has been justly deemed an invaluable remedy in fevers; but air is comparatively a bad conductor of heat. Irreparable mischief may be produced before it can adequately operate; and, in some seasons and countries, it would be impossible to obtain it of the requisite degree of coldness. Water, eight hundred times denser than air, and conducting heat with proportionable celerity, must be much better adapted to produce a powerful effect in the system. The force and rapidity of the operation of cold water may be estimated by considering the consequence of plunging a person, in perfect health, whose excitement is supported by every due degree of stimulus, naked, into water of a degree of cold at or under the freezing point. Life would be almost instantaneously extinguished. And if this extreme effect could be so suddenly induced, is there not sufficient warrant to assert, that all inferior effects might be produced by a cautious and graduated application of the same remedy?

There is good reason to believe that hot weather and febrile diseases increase the heat much more upon the surface than in the

internal parts of the body, where the temperature is nearly stationary. Mr. Hunter's experiments on the heat of animals, as existing in inflammation of various parts of the body, and measured by the thermometer, establish this fact.* The skin is more susceptible of increased heat, in diseases, than any other part, because, in a state of health, it is actually cooler, and, of consequence, possesses a greater accumulation of irritability than the internal parts. The comparative coolness of the skin must be ascribed to its exposure to a medium commonly much cooler than itself, and to the quantity of heat continually absorbed and borne off by the evaporation of the perspirable matter. And perhaps it may be true, with respect to the cold as well as the hot stage of fever, that the skin is principally and extraordinarily affected.

If, then, it be admitted, that the operation of heat is so important and mischievous in febrile diseases, and, likewise, that this excessive heat is chiefly exerted upon the superficial parts of the body, a great additional encouragement is derived to rely upon the efficacy of the application of water.

But, in order to give the sick the utmost advantage of this remedy, and to avoid laying too much of the stress of its operation upon particular stages of febrile affections, these affections must be surveyed in their utmost latitude, and appropriate degrees of heat or cold applied to the skin and other parts at seasonable periods. For example; the application of heat in the torpid or cold stage of fever, is as important as that of cold in the hot stage; and, by attending promptly to the former, more efficacy and less difficulty will be found in the latter. By neglecting the former, the disease strikes a deeper root, time is lost, and much more energy, or rather violence, is requisite in the subsequent measures.

Not only warm water, but, perhaps, other external stimulants, might be usefully employed in arresting the cold stage of fevers; among these may be reckoned alcohol, spirit of ammonia, æther, &c. which may always be kept ready for immediate use, and whose application to the skin could be productive neither of trouble nor danger. The doctrine of the hot being a natural and necessary consequence of the cold fit, and the common appearance of proportion between them in extent, degree or duration, give countenance to the use of this kind of remedy. The usefulness of arterial compression, as recommended by Mr. Kellie,† in lessening and shortening the cold stage of intermittents, and, by consequence, the whole paroxysm, suggests another remedy of similar kind, and strongly confirms and illustrates the general principle.

* Hunter's Treatise on the Blood, Inflammation, and Gun-shot Wounds, vol. ii. p. 20.

† Duncan's Medical Commentaries, vol. xix. p. 155.

With respect to the precise temperature of water, applied externally or internally at the different stages of a febrile paroxysm, alternately to restrain defect and excess of heat, much is probably yet to be learned. In general, it may be observed, that a degree of heat from 96 to 100 of Fahrenheit's thermometer, will be necessary in the stage of chilliness; and, in the hot stage, 95, or any inferior degree, as prudence may dictate, will produce a cooling effect. The use of very cold water will probably be seldom necessary or adviseable; as too sudden transitions from high to low temperatures are not requisite to produce the desired effect, and, in some cases, may possibly be productive of mischief.

The mode of applying water of various temperature to the skin of sick persons, without obliging them to leave their beds, and without inducing the least fatigue, opens a wide range for the exertion of ingenuity and invention. Sheets of oiled silk might probably be used for this purpose with great advantage; and the application of blankets and sheets, or body-linen, previously wrung out of water, at the same time causing a proper degree of ventilation to be maintained, would regulate at pleasure the heat of the patient's skin.* Damp or wet linen and sheets would, in this case, produce exactly the same effect, employed as a remedy, which they produce in bringing disease upon healthy persons; the different relative circumstances of the body, in health or in fever, form the substantial difference, and render the same application, in one case, highly pernicious, and, in the other, highly salutary.

The appropriate temperature of the water, varied with every change in the condition of the system, and always regulated with the greatest exactness of graduation, will supersede the necessity of many cautions and restrictions in the application, concerning the particular stage of the paroxysm, the chilliness or heat of the skin, the presence of perspiration, &c. which would demand much minuteness of detail, and exceed the limits prescribed to this inquiry.

* Examples of the remarkable efficacy of the external application of water may be found in Bruce's *Travels to discover the Source of the Nile*, vol. iii. p. 33; in Dr. Jackson's *Treatise on the Fevers of Jamaica*, p. 270; and in Dr. Rush's *Medical Inquiries and Observations*, vol. iv. p. 92.



R E V I E W.

ART. I. *A Treatise on the Action of Mercury upon living Bodies; and its Application for the Cure of Diseases of Indirect Debility.*
By Charles Maclean.

[Continued from vol. 4. p. 450.]

THE first part of this division of the work before us is devoted to a narrative of the author's practice and opinions, in respect to the use of mercury in febrile diseases, and others of indirect debility, for nearly ten years past. This is done not only to disseminate a knowledge of the virtues of this remedy, but also to assert, by reference to dates, his claim to such share of the merit of this discovery as the public may eventually adjudge. But as it is not necessary, on the present occasion, to enter into an examination of rival claims on this point, we shall wave the question, and proceed to the more important objects of the treatise.

From all his observations concerning the use of mercury, the author concludes that it operates by a stimulant power, and thereby cures diseases of indirect debility in their various degrees—that, used in excess or irregularly, it will itself induce a state of indirect debility of various degrees, indicated by ulcerations of the throat, soreness of the mouth, salivation, purging, sweat, increased flow of urine, &c. all which symptoms arising from the irregular action or sudden subduction of the remedy, should be avoided as far as possible, and may be cured by the same or other exciting powers applied in suitable degrees—that, in diseases of high degree, it will be safer to run the risque of producing such inconvenient effects than to exhibit under doses of the medicine—that the duration of the action of each dose appears to be not less than one, or more than two hours, and that such duration, when more exactly ascertained, should be the period of the repetition of the dose, in order to support the excitement—that it is probable mercury will be found useful in the plague, on the same principles as in fevers, dysentery, &c.—that recovery always took place, in the cases observed by the author, when an increased flow of saliva succeeded the use of this remedy—that all cases in which ulceration of the gums, fauces and tongue, or a discharge of blood from these parts, occurred, without being accompanied or succeeded by an increased flow of saliva, terminated in death—that in all the cases which, under these circumstances, terminated fatally, exten-

sive local disease of the abdominal or thoracic viscera, or both, was found upon dissection—and, finally, that lesion of particular organs, rendering them unfit for the performance of their proper functions, is the state which constitutes an incurable disease, when the foregoing principles are judiciously applied.

In these opinions and conclusions of our author, concerning the operation of mercury, we recognize much important truth, and, in our judgment, much error. In the belief of the efficacy and general suitableness of the remedy, in diseases of indirect debility, we entirely concur; and we also subscribe to the doctrine of the failure of it being chiefly referable to that visceral derangement and destruction which is a common consequence of violent febrile disorders, when improperly treated. The occurrence of such local disorganization, in the dissection of bodies dead of those diseases, and wherein mercury had failed of producing its usual effects, is a fact so instructive and pregnant with consequences, that it is to be hoped it will be duly impressed on the mind of the reader.

But we cannot agree with the author in thinking that mercury acts merely by a general stimulant power, or, in other words, only by increasing or supporting the excitement of the whole system. If this were admitted, electricity, heat, opium, alcohol, wine, and all others of the long catalogue of stimulants, would only differ from mercury in the degree of their stimulating powers respectively; which is a position contradicted by innumerable facts and uniform experience. This mistake is chiefly grounded upon the Brunonian principle, warmly espoused by the author, of the unity and equality of the states of excitability and excitement, throughout the whole animal system, at any given time; a doctrine which leads to pernicious consequences, and which we have combated, we hope satisfactorily, in the review of the first part of this work.

Neither can we suppose, with our author, that the evacuant effects of mercury are always injurious, and to be repressed with the utmost care. The cathartic power of calomel has been distinguished for its efficacy in expelling from the intestinal canal a variety of matters not easily carried off by other means. The use of mercury in the form of ointment, the constant combination of opium with calomel, and the author's hypothetical objections to depleting remedies, have, probably, all combined to prevent his observing the usefulness of his favourite medicine in the character of an evacuant.

We have seen nothing in the use of this remedy that could lead us to ascribe its evacuant properties, and particularly the power of exciting ptyalism, to the irregular exhibition or sudden subduction of it. The frequency of the dose, and the probability of ptyalism taking place, even from the ordinary intervention of sleep, would render it difficult to conform to any plan of using

this medicine, which, in the opinion of the author, would render the patient secure from such an event. Many arguments present themselves against this opinion; but we are content to leave the decision to future experience.

It has been supposed by many, that much of the efficacy of mercury, in the cure of diseases, is owing to a transfer of morbid excitement from one part of the system to another, or, as it is often expressed, to the creation of a new action. Many phenomena render this opinion probable. But the principle of the unity and equality of excitement over the whole body, which the author stedfastly maintains, on the authority of Dr. Brown, would forbid him to listen to a doctrine founded altogether on the division and inequality of excitement.

To such as have duly considered the complicated structure of an animal body, and the great diversity of powers and functions incessantly exercised in it; and, above all, to such as have adopted the fundamental principle of Dr. Brown, concerning the increased operation of stimuli upon accumulated excitability, the following language of our author will be surprizing. "To draw blood, to have afterwards the pleasure of introducing more opium or mercury into the system, than could otherwise have been done; to debilitate in order to strengthen; to accommodate the patient's habit to the quantity of medicine that is to be given, rather than proportion the quantity of medicine to the state of the patient; these are rules so wonderfully sublime, that they can never be sufficiently admired!" A more improper ground for ridicule could scarcely have been taken. If the author had ransacked opinions and practices from Hippocrates to the present day, he could not have found one more impregnable than this on the score of argument, or more practically interesting to the safety and health of mankind. But, in addition to a multiplicity of other reasoning, and the still firmer basis of experience, we shall barely suggest in this place, that the explanation of the action of mercury, after copious blood-letting, by increasing the energy of the absorbent vessels, removes, in a moment, every difficulty, and reconciles this practice, which appears to our author so inconsistent and paradoxical, to principles the most sound and universally received. A more particular account of the action of mercury in invigorating absorption, and thereby disarming the violence of malignant fevers, will speedily appear under a different form.

ART. II. *Collections for an Essay towards a Materia Medica of the United States. Read before the Philadelphia Medical Society, on the 21st of February, 1798. By Benjamin Smith Barton, M. D. &c. &c. Philadelphia. Way and Gress. 1798. 8vo. pp. 49.*

PROFESSOR BARTON still prosecutes his favourite studies, and has now given us an account of some of the indigenous plants of our country, which promise to be useful in the practice of physic. Each new fact, and every discovery in the branch of natural history, acquires an additional degree of importance from its direct subserviency to the supply of human wants, and the removal of human infirmities. We are, therefore, well pleased to observe the author of the Essay before us pushing his inquiries beyond the labours of the BARTRAMS, COLDEN, KALM, and SCHOEFF, and displaying to the public the hidden treasures of the vegetable world. And what augments our satisfaction is, that this is the undertaking of a native American. Too long have we been indebted to foreigners for the best information concerning the plants of the western continent; and, even at this moment, the German student may obtain more exact accounts of the trees and shrubs of North-America from the untranslated works of WANGENHEIM and DU ROÏ, than our own youth can find in any publication, with which we are acquainted, in the English tongue. We trust the necessity of gaining from foreigners, from foreign countries, and foreign languages, information relative to the productions of our own soil, will be less and less urgent every day.

The author divides his subject into the ordinary heads of Food and Physic, or of *Materia Alimentaria* and *Materia Medica*. On the former he is very concise. He, however, mentions the esculent manna, or sugar exuding from the fruit of the Dwarf Palm, growing on Mobile River, in Florida; and the nutritious powder, or gelatinous substance, obtained by pounding and macerating in water, the roots of the Smilax China. Both these accounts are given on the authority of Mr. William Bartram. Much, however, remains to be done on this division of the subject; and we cannot but hope that some among our fellow-citizens will devote themselves to its elucidation and improvement. In respect to maize, the labours of our illustrious countryman, Count RUMFORD, have strikingly recommended it, for its nutritive qualities to Europeans; nor can we forget, though the allusion may be deemed more humorous than scientific, the elegant little poem of Mr. BARLOW. With regard to the chemical history of this vegetable, the experiments of the learned FRANCIS MIRABELLI, of Pavia, in his work, entitled, *De Zea Mayz planta analytica Disquisitio*, (an ac-

count of which Professor Barton will find in the 36th vol. of the *Leipsic Commentar. de Rebus, &c.* for 1794, part 3, p. 460), leave us little further to desire.

The second division of his work, the author subdivides into the following sections.

I. **ASTRINGENTS**:—Under which he mentions the *Geranium Maculatum*, or Spotted Geranium, whose root, boiled in milk, is said to be an excellent medicine in the cholera of children; the *Heuchera Americana*, or alum-root, represented as beneficial in some obstinate ulcers, which have been mistaken for cancers; the *Aëlea Racemosa*, or Black Snake-root, whose decoction is a good gargle in putrid sore throat, and is also a remedy for the itch; the *Uva Ursi*, as useful in old gonorrhœa, more advantageous in nephritis, and especially that form of this disease which depends upon gout; and the *Liquidambar Asplenifolium*, or Sweet Fern, as useful in diarrhœa.

II. **TONICS**:—The author thinks that our woods afford several medicines which may be substituted for the peruvian bark. Among these he mentions the bark of the *Oaks*, and particularly the Spanish Oak, of the *Wild Cherry-tree*, of the common *Sassafras*, and of the *Persimmon* or *Medlar*. He recommends also the barks of the *Willows* and *Dogwoods*, of the *Horse-Chesnut*, of the six species of *Magnolia*, of the *White-Wood* or *Tulip-tree*, and of the *Aspin*, as possessing similar virtues. He notices the *Snake-root*, and another species of *Aristolochia*, and encourages an examination of the *Gentians* of the United States.

III. **STIMULANTS, or INCITANTS**:—I. General stimulants. The resins of the *Populus Balsamifera*, or *Balsam-tree*, and of the *Liquidambar Styraciflua*, or *Sweet Gum*, which grows so abundantly in New-Jersey, and on York and Long-Island, are enumerated under this head. Here also are placed the *Datura Stramonium*, or *James-Town-Weed*, (concerning which some interesting information occurs in the present No.), the *Cicuta venenosa*, the *Rhododendron maximum*, and the *Kalmia* or *Laurels*, as narcotic or poisonous substances. The *Andromeda Mariana* is mentioned as a wash in ulceration of the feet, among the slaves in the southern States, and the *Gualtheria procumbens*, or *Mountain tea*, for relieving fits of the asthma. The two American species of *Laurus*, the *Sassafras* and *Spice-wood*, are also noticed; and *Ginseng*, *Eringo*, and *Arum*, or *Indian or March Turnip*. This list is certainly extensive; and we cannot but think that the *Ginseng*, a root which may be chewed all day, and swallowed in considerable quantities, without much effect of any kind, is admitted on too slight a recommendation. Some qualification might have been profitably annexed to the notice of the *Arum*. It is only in its recent state that this root can properly be termed *acid*. When dried, it is freely grated and used, in

many country places, for the ailments of children, and for bowel complaints, without exciting more than a pleasant sensation of warmth on the tongue and stomach, and is far less pungent than the Calamus-root.—2. Topical stimulants. *Butter-nut* bark, *Moose-wood* bark, some of the *Ranunculi*, and several species of *Rhus*, are enumerated under this head, as possessing the power of drawing blisters, when applied to the skin. We are a little surprized, that in speaking of the efficacy of the *Rhus Toxicodendron*, as a vesicatory, Professor Barton has passed over, without notice, the evidence in its favour as a remedy in *paralysis*, exhibited in ALDERSON'S publication.

IV. ERRHINES:—Tobacco, Euphorbia, &c. are ranked as Errhines.

V. SALOGOGUES:—The *Seneca Snake-root*, and *Ash-leaved Tooth-ache-tree*, are particularly mentioned. We fully concur with Dr. Barton, that, “perhaps, there are but few of the incitant medicines which may not be so managed as to salivate.” It seems proper, however, to distinguish between that salivation which is excited by the application of stimulants directly to the mouth and fauces, and that which follows their internal exhibition. The salivation which succeeds the use of a corrosive sublimate gargle, is certainly a very distinct thing from that which is produced from the long-continued exhibition of mercurials. And, perhaps, there is no satisfactory evidence of such a salivation as this last having been induced by any vegetable substance, notwithstanding the testimonies relative to opium, &c.

VI. EMETICS:—The *Euphorbia Ipecacuanha*, *Spiraea trifoliata*, *Asarum Canadense*, *Eupatorium perfoliatum*, and *Sanguinaria Canadensis*, are noticed as native vegetable emetics. This last, we may add, has attained reputation in some parts of the country, as a remedy in chronic rheumatism. The author thinks some species of our *Violets* have roots endued with useful emetic qualities.

VII. CATHARTICS:—A number of plants are mentioned as possessing purgative qualities, of which the root of the *Podophyllum peltatum*, or Mandrake, and the *Butter-nut bark extract*, are the most remarkable.

VIII. DIURETICS:—Under this division, which contains some curious information, are mentioned the *Polygala Senega*, *Lobelia Syphilitica*, *Serratula spicata*, a species of *Ilex*, and the *Medeola Virginica*, or Cucumber-root. We have often eaten the root of the latter, which is very white, delicate, and tender, but without discovering any peculiar diuretic effect from it.

IX. ANTHELMINTICS:—The *Carolina Pink-root*, *Worm-seed*, *Mandrake-root*, *Stinking Hellebore*, *Cardinal-flower*, *Tobacco-seeds*, *Ground-pink*, *Male-fern*, *Pride of India*, and vegetable fixed alkali, stand on the list of vermifuge remedies. Dr. Barton prefers to give

the pink-root in powder. He notices the accusation against this medicine, "of occasioning, for a short time, a disagreeable affection of the eyes"—but without confirming or rejecting it. More serious accusations have been preferred against it; but we believe all of them are nearly foundationless. We have been accustomed to see barrels of it annually exhibited in decoction, with the greatest freedom, in certain parts of the country, without ever noticing, or hearing of any disagreeable consequence. It is certainly true of this valuable medicine, as has been previously remarked by Dr. Home, that it will often relieve the symptoms supposed to originate from worms, even when no worms are discharged. Perhaps its use might be advantageously extended to other complaints.

In a new edition of this Essay, which we hope may speedily be called for, it would be desirable to see a more particular account of the *Melia Azedarach*, or Pride of India, a medicine which deserves the most extensive circulation in the United States. This tree, (for it can scarcely, except in a scientific point of view, be called a plant), which is pretty large and very beautiful, abounds in the State of Georgia, and forms one of the chief ornaments, and protections against the extreme heat, of the city of Savannah. Its bark is in general use among the Georgia planters, as a vermifuge; and though, like all other anthelmintic medicines, it sometimes fails, we have the best authority for adding, that it is often successful after the most powerful remedies of this class, in common use, have been exhibited in vain.

Concluding the scientific part of his Essay, with the consideration of anthelmintic medicines, Professor Barton makes an enthusiastic and eloquent eulogium upon the application of Botany to the improvement of the *Materia Medica*. May it stimulate and inspire the youth of our country to undertakings which shall leave no field of natural science unexplored!

We here take leave, with regret, of this short but interesting publication, in our notice of which we have been the more copious, as we wish to further, by our best endeavours, the benevolent purposes of the author. And we ardently desire that this Essay may prove a nucleus to which accretions of similar information may constantly be taking place; and a germ, which, under the industrious and learned care of Professor Barton, may, ere long, expand into fragrance and beauty, and ripen into imperishable and delicious fruit.

Some additional illustrations are annexed, in an Appendix to the Essay; and, as noticed in our last No. some strictures are promised on the classification of Dr. Darwin, which we shall be glad to see. For the subject, even yet, requires much to be done.

ART. III. *Observations on the Causes and Cure of Remitting Bilious Fevers. To which is annexed an Abstract of the Opinions and Practice of different Authors; and an Appendix, exhibiting Facts and Reflections relative to the Synochus Ictericus, or Yellow Fever. By William Currie, Fellow of the College of Physicians of Philadelphia, &c. Philadelphia. Palmer. 1798. 8vo. pp. 227.*

THIS is the work whose publication was announced in our last number.—The nature of his work, and the design of the author, are set forth, in his Introduction, in these terms:

“The following *Production* (the result of much reading, reflection, and considerable experience) contains observations on the situations, climates, and seasons, in which *Remitting* or *Bilious Fevers* are most prevalent; the causes from whence they originate; the circumstances which render them epidemic; remarks on Sydenham’s doctrine of the influence of constitutions or conditions of the atmosphere; an examination of the question, whether Intermittents or Remittents are contagious or not; and a comparison of their distinguishing symptoms with those of the Contagious Fever, commonly called the Yellow Fever, which has occasioned so much mortality and distress, in different seaport towns of the United States of America, since the year 1793. With a description of the Remitting Fever, as it appears in Philadelphia; and the method of treatment which the author has experienced to be most successful.

“An Abstract is also annexed of the opinions and observations of almost all the physicians that have practised in different ages and in different climates, which have come to the author’s knowledge, that he thinks worthy of notice; the object of which is, to furnish those at a distance from public libraries with a compendious and connected view of every thing interesting that has been published, and that lies scattered in a multitude of volumes on the subject; free from the perversions of fallacious and misleading theory, or the misrepresentations of uncharitable and distorting party-spirit.”

This ample account of the publication before us, together with the very general information of the author’s particular opinions, derived from his former publications, leave us little more to do, at present, than to examine into the additional facts and reasonings by which these opinions are meant to be illustrated and confirmed. To enter into minute discussions relative to the numerous points in which we have the fortune to dissent from Dr. Currie, is incompatible with the limits prescribed to a review. On some of the more important topics, however, we shall venture to enlarge.

Under the title of *Observations on Bilious Fevers*, the author, after

defining the term Bilious Fever, proceeds to enumerate various countries and situations, in different parts of the world, which are subject to this disease: which, he very justly remarks, "is amazingly influenced in its aspect and symptoms, by the soil, situation, climate, season, and by the preceding and present qualities of the atmosphere, and the customary mode of living of the inhabitants." The application of this remark might have been extended much farther than Dr. Currie has chosen to apply it; and have been successfully employed to the removal of many of the objections which are adduced, by him, to the reasonings of other writers, in various parts of his work. It might have further saved him from an incorrectness in stating the opinions of the physicians in Philadelphia and New-York; and, in connection with the uniform testimony of facts, satisfied him, that though the contagious or pestilential quality of fevers may depend neither on *very dry* nor *very wet* seasons, yet that, with few exceptions, no extraordinary season, of whatever kind, has passed without exercising some unfriendly influence on the health of mankind, and favouring the generation and spread of epidemic diseases. A profound consideration of the force of this remark might also have led to some hesitation in deciding on the doctrine of the illustrious Sydenham. The opinion of this great physician, that when the small-pox or plague prevailed, "they either banished all other diseases, or compelled them to wear their livery"—that is, they assumed their "type and leading symptoms, and required the same treatment"—is declared to be "*totally incompatible with facts and later observations.*" Several instances are quoted to prove, "that two contagious diseases, different in kind, may prevail in the same place, at the same time." The reader will observe that the doctrine of Sydenham is not very correctly exhibited by Dr. Currie;—but, admitting the authenticity of his facts, they can scarcely authorize the strong condemnation of Sydenham's opinion. On the contrary, some of the cases adduced to disprove, actually confirm it. The English Hippocrates admits the co-existence of two diseases in the same place. His remark is merely that the one was compelled by the other to wear its livery. And this, so far from "being incompatible with facts and later observations," daily receives additional confirmation, and is established by the very authorities quoted by Dr. Currie. Thus, in New-Haven, in 1794, the grand epidemic was the *Scarlatina*; and Dr. Munson says, that the Yellow Fever, which afterwards appeared there, "partook of the nature of the epidemic then existing," by not bearing the lancet. The Letter of the Rev. Mr. Backus, published in our No. IV. furnishes a striking fact to the same end; and the accuracy of Dr. Sydenham's observations is supported, by every writer of credit, from Thucydides to Dr. Rush. Many er-

rors, no doubt, have been mingled with the discussions of this topic, in consequence of the mistaken notions which have prevailed among medical writers, particularly since the time of Mead, relative to contagion. But the leading principle is unquestionably well founded; and if we do not enter into an ampler consideration of the subject at present, it is from an expectation of being soon called to the examination of a work abundant in its details and illustrations.

After some brief remarks on the "causes of Bilious Fevers," and on the diffusion of "Febrile Miasmata through the air," which require no particular notice, Dr. Currie enters into a discussion of these two interesting questions:

"1. Is the Bilious Fever, or any other variety of the Remitting Fever, occasioned by Marsh-miasmata, or the exhalations from putrid or putrefying vegetables, ever contagious?"

"2. And was the Yellow Fever, which occasioned such deplorable mortality in Philadelphia, in the summer of 1793, and which has appeared in other sea-port towns in the United States of America since that period, only a higher grade of the Bilious Fever, generated by the same causes?"

The negative of both these questions is asserted.

In the present imperfect state of our knowledge concerning contagion, it may be deemed too bold peremptorily to decide that Remitting Fevers are never contagious; but, we have no hesitation ourselves in confessing this to be our opinion. Perhaps, however, the great difficulty in the way of obtaining correct notions on this point, arises from the indistinct and various use of the term contagion; and we regret that Dr. Currie has not rather defended his side of the argument by a philosophical inquiry into the nature of contagion, its laws of operation, and its generation, than by a series of objections, not always ingenuously urged, to the testimony of other writers. Could it be proved (as we think it may), that, from the uniform laws of the immediate cause of pestilential fever, or of fevers in general, no such fact as their propagation by any poisonous material, separated from the body, can happen, this would completely overthrow all the arguments derived from the supposed occurrences of such facts. But, till this is done, or till direct proof is brought of the inaccuracy of any particular writer, that writer's evidence must be admitted as valid against any mere conjecture of another, who had neither opportunities to observe, nor grounds for distrust. Thus the general observations of Dr. Lind cannot be allowed as of sufficient force to set aside the testimony of Dr. Rogers, respecting the fever in Wadham College; because it is more likely that Dr. Lind's opinion is erroneous, than that Dr. Rogers, who was an eye-witness, should be mistaken. There is good reason, however, to believe,

that Dr. Rogers erred in mistaking the gradual operation of the same cause, for the effects of one which, hitherto, has never been proved to have existence. So in the passage quoted from Zimmerman, though somewhat incorrectly expressed, the opinion of that author is sufficiently plain. He unquestionably supposed that the fever occasioned by the flax was propagated by contagion—that is, by intercourse with or contact of the sick. But, though this is clear, and though there need be no doubt of the capability of putrefying flax to produce a fever in persons exposed to its exhalations, there is no sufficient evidence that the fever in question was propagated as Zimmerman supposed. In short, though we entirely agree with Dr. Currie in his conclusion, that the Remitting and Intermitting Fevers, or forms of fever, are never contagious, in the strict sense of the word, we do not think that he has given to his opinion all the support of which it is susceptible; nor, indeed, that it is capable of adequate support on the ground he has taken.

The discussion of the second question is brief, and conducted in a manner neither very lucid nor very satisfactory. Indeed, the author himself seems aware of the difficulty of the task undertaken, and acknowledges the embarrassments which beset an attempt “to convey precisely, in words, a description of the symptoms which distinguish the one disease (Bilious Fever) from the other (Yellow Fever); their discriminating marks not consisting so much in one or two symptoms, as in a certain assemblage of several.” But he adds, that “when the whole of the symptoms of each are compared jointly and severally, the difference is exceedingly clear and evident.” In this conclusion, however, we cannot concur; neither reading, nor reflection, nor observation, having presented to our minds any sufficient reason for such a belief. And, we are persuaded, that whoever will compare Dr. Currie's own descriptions of the two diseases (as he denominates them) will find it impossible to discern any generic difference between them. That which is most insisted on, not in this place merely, but in various parts of his work, is the difference in the type, or recurrence of the remissions and exacerbations, of these fevers. But it seems to us very improper to fix on this circumstance as a criterion which, of almost all others, connected with Yellow Fever, is most liable to variation, from a thousand circumstances. And, in the milder forms of fever, we have often observed an irregularity and obscurity in the remissions and exacerbations, governed by no apparent order, and reducible to none of the systematic divisions or distinctions of febrile diseases. Nor is the distinction asserted in respect to the excretion of bile more happily taken, if we may rely on the testimony of authors of high and deserved authority. Even in Philadelphia, Dr. Rush assures us, that, in the Yellow Fever of 1793, “on the first and second days of the disorder, many patients

"puked from half a pint to nearly a quart of green or yellow bile." And we have seen, not one instance only, but several, that correspond very correctly with Dr. Currie's description of Bilious Fever, as to the general turn of the symptoms, and particularly as to the type of the fever, in which no unusual quantity of bile was manifest at any period of the disease.

We forbear any further consideration of this question, till we have opportunity to examine the author's intended publication on Yellow Fever, as contradistinguished from Bilious Fever; in which we are led to expect a more copious history of the origin and causes of the first-named disease.

The discussion of the two preceding subjects is followed by "A Description of the Bilious Remitting Fever, as it usually appears in Philadelphia, in summer and autumn," drawn up with equal perspicuity and precision; and well deserving to be read attentively by the student. The remarks on the predisponent causes, prognosis, and on the weather, are also deserving of attention. Dr. Currie's plan of cure consists in removing the patient to a dry situation and pure air, after the removal of the remote causes of the disease; and in procuring such an intermission of the symptoms as shall admit of the administration of the peruvian bark. To this end, bleeding is recommended; an operation which our author has sometimes found it requisite to repeat, (to the taking away of ten or twelve ounces a day), every day, to a fifth time; and, in a few cases, he has opened a vein twice a day. Calomel is particularly recommended, upon the authority of Drs. Balfour, Clark, Wade, and Chisholm, &c. as a purgative; and, joined with opium, to take off the irritability of the stomach. Sweating, by means of antimonials, to assist in procuring an intermission; and the cold bath, upon the credit of Dr. R. Jackson, when the stomach rejects the bark—which the author advises to be given by injection into the bowels as well as by the mouth. To reduce the dropsical swellings which sometimes succeed, ten or fifteen grains of pearl-ash, two or three times a day, in a bitter draught, are directed; in more troublesome cases, the digitalis, squills alternated with chalybeates, mercurial frictions, &c. &c. with a variety of treatment accommodated to particular symptoms, and the various stages of convalescence, for which the work itself may be profitably consulted.

The next and principal part of Dr. Currie's publication consists of "An Abstract of the Opinions and Practice, in Febrile Diseases, of Physicians of different Countries, &c. with Occasional Remarks," preceded by Dr. Buel's account of the Sheffield fevers of 1793, 1794, and 1795, (from Webster's Collection), and two letters to the author, from Dr. Johnson, of Talbot County, Pennsylvania, and Drs. Taylor and Hansford, of Norfolk—ex-

tending, in the whole, from the 79th to the 206th page, inclusive. In this Abstract, after a hasty sketch of the opinions and practice of several of the ancient, and of the earlier modern physicians, the author proceeds to display, in their own words, generally, those of Hoffman, Pringle, Cleghorn, Huxham, Morgagni, Tissot, De Monchy, Lind, Badenoeh, Rush, Baker, Cullen, Blane, Moseley, R. Jackson, G. Fordyce, Paterson, and Wade, at various length: and the conclusion which he derives from this copious survey of the writings of others is, "that the Remitting or Bilious Fever, as it is commonly called, is only a variety of the Intermitting Fever, occasioned by an invisible matter (known to exist only from its effects) derived from dead animal and vegetable matter, in a state of putrefaction; that it is distinguished by an evident remission or abatement, but not a total suspension or cessation of all the febrile symptoms once in the course of every twenty-four hours, most commonly in the morning, and a renewal and increase of the same before the evening; differing in this, as well as other circumstances, from the Typhus, or Continued Fever, occasioned by human contagion, in which there is almost always an exacerbation or increase of the fever later in the evening: that the nearer it approaches to or resembles the intermitting type, the greater is the prospect of safety: that the paroxysms are prolonged, and intermissions prevented, or rendered imperfect, by two opposite circumstances—viz. by a *phlogistic* diathesis, and by preternatural *depression of strength*: that this kind of fever is not contagious, or communicated from one person to another: and that it differs from the Malignant Yellow Fever, not only in that respect, but in its causes, nature, and symptoms, as well as in the remedies requisite for its cure." And, finally, "that no general or infallible rule can be established with regard to blood-letting in Remitting Fevers, derived from Marsh-miasmata." Indeed, it is observable, that of all the late writers, quoted by Dr. Currie, Dr. Moseley is the only one who decidedly recommends venæsection. From this decision of these writers, our author dissents, and, in our opinion, with great propriety. For nothing is more obvious than that, however judicious their practice may have been in the countries whose diseases they describe, no prudent physician could implicitly follow it in a climate, and under circumstances, in many respects, so different as ours, and where even a few years has very considerably varied the aspect of febrile diseases. This last fact should not have been so entirely overlooked by Dr. Currie. Its right consideration would have sufficiently explained to him with how much propriety Dr. Rush might adopt a different practice in the fevers of 1780 and 1793.

A brief *Appendix* is annexed, in which Dr. Currie endeavours
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to prove the uniform importation of Yellow Fever into the United States, its highly contagious character, and in which he hastily describes its symptoms and method of cure. But of this we shall not take notice at present—reserving our remarks for his general treatise.

Two short papers, on the Cholera, and on the Bilious Diarrhoea of infants, are added, which, notwithstanding some omissions, may be safely followed in the more usual forms of these complaints; and the author's Treatise of the Yellow Fever of 1793 is bound up in the same volume.

On the whole, though we cannot admit that Dr. Currie has fulfilled every promise which is held forth in his Introduction, yet we think that he has furnished to practitioners remote from books, and the liberal and extensive information of the thickly-settled parts of our country, a book which, in connection with a few other of our recent publications, may be both useful and instructive; and, if not a luminous guide in opinion, generally a safe conductor in practice.

ART. IV. *A Treatise on the Autumnal Endemial Epidemic of Tropical Climates, vulgarly called the Yellow Fever; containing its Origin, History, Nature, and Cure; together with a few Reflections on the Proximate Cause of Diseases.* By John B. Davidge, A.M. M.D. Baltimore. Peckin. 1798. 8vo. pp. 65.

THE ravages which have been made, by the Yellow Fever, in human Society, particularly within a few years, and in our own country as well as in others, have given birth to numerous publications of various degrees of ingenuity and usefulness. The longer the consideration of this disease has been continued, the more difficult the medical world appears to have become as to admitting for truth the several explications of its phenomena, and adopting as proved the efficacy of the numerous means recommended for its cure. In this situation of the public mind, a work which holds forth the promises contained in the title just quoted, can scarcely fail of being purchased with avidity and examined with attention. How far it will be thought to justify these promises, in the execution, may, perhaps, be more easy to conceive after the examination, to which we now design to subject it, is completed.

The Treatise before us, which the author has divided into four chapters, is prefaced by a short Introduction, the substance of which seems to be this: That erroneous opinions produce little effect but when assumed and recommended by men of distin-

guished reputation and acknowledged abilities; that the contagious property ascribed by some medical writers to diseases generated by marsh exhalations is an error; and that this error having been adopted and enforced as truth by so illustrious a physician as Dr. Rush, it is necessary that it be combated and exposed. From this the reader would be ready to suppose, that the principal scope of this Essay was to settle a question of medical theory; but, though a large share of it is indeed devoted to this end, yet this is by no means the single object of the writer, as will be still further apparent from the titles of his chapters, which treat—1. Of the Origin, History and Nature of the Yellow Fever; 2. Of the Proximate Cause; 3. Of the Diagnosis; and, 4. Of the Cure.

Dr. Davidge commences his first chapter with some objections to the doctrine which teaches that the Yellow Fever may be imported from one country into another. He regards it as every where the product of the same cause; and that this cause is the same with that which generates the ordinary Intermittents and Remittents, from which he supposes this disease to differ only in degree—being “conceived in the same matrix, and quickened “by the same sun.” And he appears inclined to believe, that the noxious cause of these various forms of fever is Hydrogen (*Hydrogen Gas*) “very much accumulated, or peculiarly combined.” We are not certain that we perfectly comprehend the author; but we think that this conjecture derives very little support from the numerous trials which have been made with this remedy, in various proportions and combinations, by the friends of Pneumatic Medicine in Great-Britain and elsewhere.

In the short History, which succeeds, of the Fever that prevailed in Baltimore the last summer and autumn, some particulars worthy of notice are recorded. It has been believed by many physicians who discard the opinion of the uniformly contagious property of the Yellow Fever, that it assumes this character when certain local causes have imparted a peculiar morbid principle to the atmosphere, or that this Fever was then liable to be excited by the union of the effluvia from a body diseased with it, with this morbid principle derived from local exhalation. But, if the whole of both these conjectures be not gratuitously or slightly assumed, they are not strengthened by what was observed at Baltimore in 1797. It appears, from Dr. Davidge’s account, that the Bilious or Remitting Fever, in its ordinary form, prevailed in that Town, and particularly at the Point, from June. During its continuance, in this degree, a lady, lately from Philadelphia, sickened with the true Yellow Fever, in its worst form, and fortunately recovered, without imparting any contagion or infection to her attendants or others. On the contrary, the progress of the Baltimore fever was regular, from its original mild appearance, till it was gra-

dually lost in the severer degree of Yellow Fever, as the season advanced, and in the month of August. From this time, till early in November, when it became entirely extinct, the Yellow Fever alone was observed; and it was obviously more severe, more early in its occurrence, and more general in its prevalence, in the direction of the winds which blew over certain marshes, stagnant waters, and depositions of filth. In Baltimore, as in other places, no particular age or condition was exempt from its attacks; but it was most fatal to the young and robust.

From this brief history of the Baltimore fever of 1797, Dr. Davidge recurs to the consideration of its origin and nature; and as, in discussing this subject, he dissents, in several particulars, from the two opinions which have gained the greatest number of advocates, it may not be improper, previous to a detail of his arguments, to contrast his opinions with those of Dr. Rush and Dr. Currie, the most voluminous writers on the Yellow Fever of the United States.

Dr. Rush and Dr. Davidge consider Intermittents, Remittents, and Yellow Fever, as merely varieties of one disease. Dr. Davidge supposes that they are produced by the influence of heat on putrid vegetables and stagnant water, or by the exhalations occasioned by these means; Dr. Rush, that the exhalations from putrefying animal and vegetable matter are the most usual causes, but also that a noxious material, emanating from a body sick with these fevers, is sometimes the cause. Thus the one admits that these fevers may be contagious, which the other pointedly denies.

Dr. Currie and Dr. Davidge agree in a two-fold division of fevers, into such as are the offspring of putrefactive materials, or their exhalations, which are never contagious; and such as are excited by noxious effluvia, emanating from bodies diseased with particular fevers, and which are solely propagated by contagion. In the first class Dr. Currie ranks the various forms of Intermittents and Remittents; in the last, Yellow, Typhus, Petechial, Jail and Pestilential Fevers. From this arrangement Dr. Davidge departs only by inserting the Yellow Fever in the first division.

In popular use, no distinction is made between the terms *Infection* and *Contagion*; nor, perhaps, would an etymological examination of them justify distinction. It will be convenient enough, for our present purpose, however, to assume a distinction. The reader, therefore, will, for the present, be supposed to understand by the first, *Infection*, some noxious gaseous substance, capable of exciting fever, and not emanating in that form and with that power, from a diseased body; and by the second, *Contagion*, a poisonous material, capable of exciting a peculiar disease, and emanating with that power, from a body sick with that peculiar disease. That this is a distinction, in fact, none, probably, will

deny: and these terms being understood to express the fact, it will be obvious, that wherever the materials occur and the circumstances are present, which favour the generation of infection, that there it may exist—whether it be in a marsh, in a street, a yard, a house, a hospital, or a ship. But, as infection and contagion are not the same thing, the circumstance of many persons, resident in one place, being affected with a similar disease, together, or in succession, is not, of itself, a sufficient evidence of the presence of one or the other; since this effect may be produced by the one as well as the other. Other concurrent circumstances are, therefore, to be taken into consideration, before a satisfactory judgment can be formed, whether the disease be excited by infection or contagion.

After asserting that the Yellow Fever cannot be propagated by contagion, nor excited out of the atmosphere wherein it originated, Dr. Davidge attempts to destroy the objections to this opinion, which Dr. Rush has drawn from the writings of Rogers, Zimmerman, Clark, &c. by remarking, that, in the two first cases, it does not appear that the disease prevailed beyond the limits of its first ravages; and, therefore, that we are at liberty to believe that it was continued, not by the intercommunication of sick and well, (not by contagion) but by the cause which originally excited it—(by infection). This is an important and just distinction, and is strikingly illustrated in the Essay by Dr. Buel, published in our No. IV.—Our author is not equally happy in his objection to the argument derived from Dr. Clark. Where was the necessity of embarrassing himself with conjectures as to the possible exposure of a ship's crew to marsh effluvia? If putrefying vegetables and stagnant water can generate a pestilential material in marshes, surely, by the aid of the same heat, they can produce the same material in ships. And will any one deny that they are not often to be found in ships? But this material, this gas or exhalation, though it should affect the whole crew with fever, could not be denominated contagion. The facts recorded by Dr. Clark, therefore, do by no means establish the contagious character of fevers.

Our author proceeds to reprobate the doctrine of the contagious character of diseases arising from marsh effluvia, &c. and of Yellow Fever, as one of this description, as unphilosophical; and, after quoting the opinion of several respectable writers which are in his favour, remarks, that "endemic is the antithesis of contagious." He asserts that both endemic and contagious diseases may be epidemic; and that the extent of their prevalence, not their peculiar origin, determines their claim to this title; and he maintains, that when a disease is incapable of propagating itself, independent of the adventitious assistance of a peculiar purity or impurity of the atmosphere, it cannot properly be called contagious. This he il-

illustrates by comparing Intermittents, &c. which are only excited in situations exposed to the exhalations before noticed, with Small-pox, Measles, &c. which are communicated by contact, &c. in the purest air, and in every season.—As the author has enumerated the Jail Fever and the Plague among diseases of specific contagion, as well as Small-pox and Measles, it may be proper to inquire a little into this subject, and to examine whether there is any better ground for a distinction between these and Yellow Fever, than between this last and our ordinary Remittents.

An attentive examination of the facts relative to those diseases—we will, for the present, call them epidemics—which have received the name of Plague, and Jail Fever, will shew that they have rarely, if ever, been propagated beyond the diseased atmosphere in which they originated, except by the operation of general causes, wholly independent of what we here mean by contagion. But, if this be the fact, there is no more reason for believing (from this circumstance) that the Plague is contagious, than there is for believing the Yellow Fever so. In Egypt, the Plague unquestionably originates in exhalations or effluvia extraneous from the body, (whether vegetable, or animal, or both,) and is governed by uniform laws, as to its commencement, progress, and disappearance. In many other parts of the world, not to say all, its origin and course are the same. It should appear, then, that this disease is capable of being excited by infection; and if by infection, then, according to Dr. Davidge's own logic, not by contagion. What is true of Plague, is also true of Jail Fever. Introduce healthy persons into the pestilential atmosphere, and they will often be made sick. But, cleanse the sick, and remove them into pure air, and they communicate no disease. That men, in high latitudes and healthy places, have been rendered sick in consequence of visiting ships that have arrived from unhealthy climates, is no proof of the contagious property of the fevers of those climates. The cause of sickness may have been generated in the ship (as was the case in the *Busbridge*); it may affect only the crew, and disappear; or the crew may sustain it, uninjured, by a habit gradually formed, and the first effect be felt by healthy, unhabituated persons, in the first port she visits. But this, whatever may be the form of the disease, is not contagion, it is strictly infection, and is wholly independent of any poisonous material separated from a diseased body. The same reasoning will apply to cases of supposed introduction of Plague by means of clothes; and on this subject Dr. Davidge himself reasons very properly at p. 32 of his Treatise. But, in all these cases, the sickness would be strictly limited to the persons exposed to its cause, or to the infected; and would never be propagated to others, except in circumstances hereafter to be noted: that is, the disease would be

confined to the sphere of exhalation, exactly as in the case of the marshes and stagnant pools.

Another error of our author deserves to be corrected, as its correction will go far in illustrating the remaining difficulties on this subject, and will, perhaps, dissipate the confusion which arises from his assumed distinction of fevers. This error is, that Intermittents, Remittents, and Yellow Fevers, are solely the offspring of vegetable putrefaction and stagnating water. A short attention to this point will shew the impossibility of such an occurrence. No pool, no marsh, can be found which does not abound in animals or animalculæ. The circumstances of season which expose the vegetables of these places to putrefy, equally affect their animal inhabitants; and in docks, streets, and yards, the recrements and excrements of animals are profusely scattered. Pure vegetable putrefaction, therefore, can never happen in these places. But, were it possible, do we not know that numerous vegetables contain, though in different proportions, the same elements as animals? Modern chemistry has discovered, not merely carbone, oxygen, and hydrogen, in plants, but azote. This element is particularly abundant in wheat, rye, and maize; and, by analogy, may be presumed to exist in all the grasses, legumes, cruciform plants, potatoes, &c. But these are the vegetables most abundant in marshes, and the vicinity of man. It should seem, therefore, that the putrefaction of animals and vegetables should render up to the atmosphere very similar products, and capable of exciting diseases of a very similar character. We are not yet sufficiently inducted into the mysteries of nature, to know what varieties may flow from the perpetually varying proportions in the intermixture of animal and vegetable remains.

Let us extend this survey one step further.—In what respect does the mortified flesh which sloughs off from the limb of a living man, that is separated from the mouth of one labouring under the angina maligna, or excoriated from the intestines of a dysenteric patient, differ from the putrid flesh of a dead ox, dog, or horse? In what respect do tears, saliva, and sweat, differ from other healthy, or yet disorganized animal matter? Suppose a piece of meat exposed to the action of heat, and air, and moisture, till it goes through those chemical changes which we denominate putrefaction—and suppose the perspirable matter similarly exposed, and carried through a similar process—what reason have we to believe that the result would be widely different? And, if the first should furnish a material qualified to excite fever, why not expect it from the last? If clothes were at hand to absorb the second, would they not equally absorb the first? But, in neither case could this material, thus formed without the body, and in no respect deriving its poisonous qualities from the body, be fairly

called contagion. In the last case, as in the first, and in both, as in marshes exposed, half covered, to a hot sun, the pestilential principle is a new product, independent of disease.

That the perspirable matter of men sometimes undergoes such changes, and, in consequence, sometimes excites disease, is probable. But, that the disease excited is not the consequence of any previous disease of another, is quite as clear. This is particularly observable in the so much-quoted story of the Black-Assizes. The criminals were well;—they had been well;—habit had rendered them insensible to the influence of that cause which proved so fatal to their judges. Are healthy bodies, then, capable of generating contagion?

But instances of this kind, if they sometimes happen, are rare, and produce no more extensive mischief. For in this case, as in that of Yellow Fever, or of Intermittents, the infected only sickened. They did not propagate the disease. And why not, if it were contagion? That instances of infection, from this source, are very rare, is inferred from the well-known custom of the Turks and others, of selling at vendue the clothes stripped from the poor who have just died of the Plague, which are purchased and worn, without precautions and without injury, by those who survive.—The true secret of the supposed contagious nature of these diseases, as well as of Yellow Fever, in many cases, is exposed by our author at p. 24. The debility induced on the well, by fear, watching of the sick, &c. in the diseased atmosphere, favours the operation of the pestilential cause. Hence the attendants on the sick are so much more apt to be affected in the same manner, than the well who are not thus debilitated; even if the general exposure is the same. And even this debility would be far less injurious, did not their fears continually conjure up the spectre Contagion, to walk the sick-room, and shake from his yellow mantle pestilence and death.—Contagion has long been a bugbear to physicians as well as others. The ingenious and philanthropic labours of Dr. Haygarth and his correspondents have robbed it of half its terrors—and shewn us how limited is the sphere of the contagious influence of Small-Pox—(so limited that probably we may reverse our author's calculation (p. 23) and say, that, under ordinary exposure, 49 out of 50 would *escape* it.—); may the present discussion—the length of which the importance of the subject will doubtless excuse to our readers—aid to disarm it of the remainder. We shall take leave of this part of Dr. Davidge's work, by noticing two facts which he records. 1. That Dr. Watkins, of Kentucky, (p. 26) who was present at Baltimore during their fever of 1797, declares it to resemble, in all essential characteristics, the fevers of that State; which are evidently and solely the product of the marshes, and are never contagious. 2.

That the author has observed (p. 28) two instances of persons falling sick not till the eighteenth day after exposure to an impure atmosphere—when, “during the intermediate space, they were “not exposed either to sick bodies or vegetable effluvia.”

In his second chapter, which is intitled, “Proximate Cause analyzed,” the author, after a cursory review of the opinions of preceding physicians, proposes some objections to the theory of Dr. Rush—of which the reader will find an account in No. 2. of our vol. I. But these objections are rather in the form of assertion than of argument; and had he consulted the illustrious Herman Boerhaave on the Causes of Diseases, he might not have so peremptorily pronounced the hypothesis of the Professor of Philadelphia untenable and illogical.

But, if the theories of others are so faulty, are there no objections to that of Dr. Davidge? A man is long exposed to cold and wet, he becomes feeble in consequence, he enters suddenly a heated room, and soon after is seized with pain in his breast, fever, cough, and other symptoms of Catarrh or Pneumonia—How would Dr. Davidge describe this course of events in his own terms? Would he call cold, or the debility which was the consequence of cold, the Predisposing Cause? Would heat, or the violent arterial action which follows, be denominated the Occasional Cause? And is the debility or the heat to be esteemed the Exciting Cause? We suspect that our author has not yet penetrated to the hiding-place of this long-concealed mystery. Leaving it, however, to be detected by future adventurers, we pass on to the third chapter, which treats of the “Diagnosis.”

In this division of his work, Dr. Davidge has enumerated the symptoms of the Yellow Fever in its various stages, but without any additional remarks that require particular comment. Some observations might be hazarded on his “Cure,” had we not already exceeded our usual limits. These, however, would rather have reference to his reasonings than to his practice; which, for the most part, corresponds with that pursued by those physicians who prefer what is called the antiphlogistic plan. Our author objects to Dr. Rush’s profuse bleedings; and cites, not merely his own experience, but that of the West-India practitioners, in support of his objections. But he overlooks the differences of season and situation, and the discriminations of Dr. Rush himself. Nor can we conceive that a patient would be much less debilitated by a cathartic which should operate thirty-five times, (p. 55) than by two or three small extra bleedings. But this is a question of experience on which we do not pretend to decide. In this city we have more often seen patients suffer from deficient than from excessive blood-letting.

Though it does not strictly come within the design of this review.
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view to notice the style in which medical works are composed; yet, as style is inseparable from sentiment, and as the purpose of writing is to convey information clearly and completely, we have some right to complain of an author whose manner is deficient in this respect. This is oftentimes and singularly true of the Treatise before us. That this remark is not captiously made, will appear from a few quotations. Page 25. "The human effluvia establishes (*establish*) one order of diseases, and the marsh effluvia another—these orders never embrace—they have no intercourse. "Of these identity forms the curve, and those effluvia the asymptotes—they apparently approximate, but they can never come into contact." Page 27. "Which is most consonant with probability; for gentlemen, going to an atmosphere charged with poison and death, an atmosphere immediately wafted from the point and concentrated under a hill, where many had been forced, by its deathful influence, to pass the bourn of life, and others to perceive death, with its black wings, to hover about them, to take it from those exanimous and moribund bodies, or this death-bringing air." Page 39. "This epoch demands self-evident premises or proven data for the ground-work of our inductions. Jurare in verba magistri is the motto of unthinking hebetude, but a master's nod ought not to block up the avenues of research." But, notwithstanding these, and many similar defects, the author evinces, in this Treatise, no small portion of sagacity, learning, and reflection. Nor are we without the expectation, when the habit of composition shall have purified his style of these affectations, that he will produce something at once honourable to himself and useful to mankind.

ART. V. *An Account of the Contagious Epidemic Yellow Fever which prevailed in Philadelphia in the Summer and Autumn of 1797; comprizing the Questions of its Causes and Domestic Origin, Characters, Medical Treatment, and Preventives.* By Felix Pascalis Ouvrière, M. D. &c. Philadelphia. Snowden and M'Corkle, 1798. 8vo. pp. 180.

THIS is the history of a distemper of which about thirteen hundred persons are reported to have died, in Philadelphia, in the year 1797. The author has published an intelligent and useful work, and the value of it is increased by the intrepid manner in which he opposes the prejudices which occupy the minds of the inhabitants of the city in which he dwells. For, notwithstanding the popular opinion to the contrary, he tells them the Yellow Fever is generated by putrid effluvia from vegetable and

animal fermentation. He states, that the opinion of its importation, one hundred years ago, from Siam to the West-India Islands, and from these Islands to North-America, cannot be admitted exclusively to its being generated spontaneously in every warm country, from the above-mentioned causes; and that the Philadelphians are exposed to such exhalations as seem adequate to its generation. The author is also of opinion, that it is not only of a highly malignant nature, but that it is contagious.

Dr. Ouvrière thinks the Yellow Fever is the first and highest degree of Malignant Bilious Fever: that though there is but one sort or genus of the disorder, there are several species or degrees of malignancy in it: that it consists of two periods—the one, as he terms it, of the *Symptoms*, which lasts from one to five days—the other of the *Crises*, which always prove mortal if they appear before the third day. In cases of recovery, he observes, the fever is remittent during seven days, like the *causos*, or ardent fever.

The cure of the disorder, the author thinks, is comprehended within three indications. 1. To evacuate corrupted and acrid bile: 2. To counteract the progress of inflammation: 3. To assist the depuratory crisis of the whole system. To fulfil the first, he recommends calomel, particularly when united with other drastics—and an antimonial emetic: though he says the inflammatory symptoms must be considerably overcome before these remedies can be efficaciously administered. To accomplish this second indication, profuse and repeated bleedings are recommended, as the only sure means of abating the inflammation, especially within the first three days, during which, not to take enough would be fatal. The bleeding and purging being attended to during the three days, the last indication is to be answered by putting in practice all the medical rules for the treatment of malignant fevers, &c. Dr. Ouvrière observes, though mercurial drastics are so eminently serviceable when acting upon the bowels, that the external application of mercury is useless and dangerous; and that previous complaints in the liver, in the bladder, and in the urinary passages, as well as scorbutic and venereal affections, are, without exception, obstacles to the cure of the Yellow Fever.

The fifth section of this work, on the means of *general* prevention, we recommend to the citizens of Philadelphia, who are incessantly looking abroad for sources of imported contagion. Domestic and local causes enough are there pointed out to satisfy every unprejudiced and candid mind. The Police and Health-Office ought to study this part of Dr. Ouvrière's book, and attend to its plain and instructive directions; to bury the dead out of town—to introduce pure and running water, by aqueducts, from a distance—to have wharves constructed of stone instead of wood

—to clear out and cleanse privies and their pits annually, and to throw lime into them—to put the gutters, sinks, cellars, &c. under the direction of commissioners during the summer and autumn—and to cause vessels with suspected cargoes and holds to be unloaded at a distance from the city, and to undergo, if necessary, a quarantine of five days. And, in addition to this section, we recommend to our fellow-citizens, in the sea-ports of the American continent, a perusal of the coercive and energetic mode, provided by the Legislature of New-York, for the preservation of their capital, contained in the first, second and third sections of the act to provide against infectious and pestilential diseases, passed 30th of March, 1798.

As to *particular* prevention, Dr. Ouvrière advises vegetable diet, light nourishment, and antiphlogistic and depleting remedies; as also refreshing exercise in the morning or evening, recreations, and freedom from hard labour. He advises carefully to avoid intercourse with infected people and their houses. What applies to people in general, applies, with greater force, to those who attend the sick. Infected beds and clothes are to be destroyed, or kept in cold water, covered over with ashes.

For the sake of practical illustration, the author has next given the details of symptoms and practice in twelve cases of the disease he describes. Some of these were of fatal termination, and others of recovery to health. Dr. Ouvrière appears to have related the instances of successful and unsuccessful treatment, and to have commented on them, with great candour. We wish this disposition of mind was more prevalent among the writers of observations; and that the readers of this piece would well consider the pertinent and well-timed remarks contained in the concluding address. To this work there is subjoined a short postscript, containing speculations on the condition of the liver and the bile in Yellow Fever, on the Brunonian doctrine, and on the dispute in the city where the author lives, concerning the importation of the disease under consideration. We shall not, however, dwell upon these, but refer such of our readers as are curious to become acquainted with Dr. Ouvrière's opinions, to the work itself.

It is our wish to treat every publication which we review with candour, and its author with delicacy. The dissatisfaction expressed by the writer of the present piece, in his expostulatory letter, inserted under the article of "Correspondence," in our vol. I. No. 4. at the sentiments we gave upon his former publication, has induced us to offer rather an abstract than a review of the treatise before us. Dr. Ouvrière has been kind enough to inform us (Case No. xii. p. 163) that he is "of a bilious choleric temperament, and irritable nerves." As we have no disposi-

tion to move his choler, nor irritate his nerves, we entertain a belief that we have conducted this account of a work, in every point of view more respectable than the former, in such a way that the author shall have no cause to be displeased with us.

ART. VI. *An Inaugural Dissertation on the Production of Animal Heat; read and defended at a Public Examination, held by the Medical Professors, &c. of Harvard College, for the Degree of Bachelor of Medicine, July 10, 1797. By Lyman Spalding. Walpole (New-Hampshire.) Carlisle, jun. 1797. 8vo. pp. 30.*

AFTER some introductory remarks, Mr. Spalding opens his subject by mentioning the two great hypotheses concerning animal heat, which have been advocated by philosophical men; the *chemical* and the *mechanical*, or, as he expresses them, the processes of *combination* and *decomposition*, and that of *friction*. Of these he adopts the former.

In exhibiting a view of the manner in which respiration is performed, the author shews himself well informed of the modern experiments and opinions on the subject. The ordinary state of the atmosphere—the alterations made in a portion of it during inspiration—the differences between venous and arterious blood—and the manner in which the vital fluid receives its caloric, according to the latest experiments, seem to be well understood by him. In inaugural essays, the writer is supposed to acquit himself well if he escapes blame, but the merit of Mr. Spalding's Dissertation does not rest here. The manner in which he has mentioned septon (azote) as an ingredient in the blood and in the atmosphere, deserves particular notice.

"The venous blood," says he, (p. 16) "when brought to the lungs, is of a dark modena-red, which is produced by the presence of a large quantity of hydrogen or *azote*, and by the absence of oxygene." "Blood attracts hydrogen and *azote*," &c. &c. (p. 17.) "*Azote* arises mostly from putrefying animal matters, is very noxious to animals and flame," &c. (p. 19.) These ideas are worthy of attention. Physiologists, if we recollect right, have generally ascribed the peculiarities of the venous blood to a defect of oxygene, and a surplussage of carbone and hydrogen. But certainly this explanation is defective. Septon enters more or less into the food of most animals. After concoction in the stomach, a portion of it enters the sanguiferous vessels, and circulates as an ingredient in the mass of blood. The analysis of blood shews this. By the function of nutrition, as much septon as is necessary passes off to supply the muscles with

their proportion of this material. The analysis of sweat, perspirable matter, and urine, shews that parcels of it pass off with these secreted fluids; and, doubtless, the same obtains in several others. The residue, not excreted from the body, remains chiefly in the blood and solids, and if in due proportion, doubtless contributes to their natural wholesomeness. If there be too little or too much, both the defect and excess of septon may be a cause of disease. In the former case, sometimes giving rise to morbid tenuity and exility of fibre, which, though connected with debility, is still often very tenacious of life; in the latter, manifesting, to all outward appearance, tokens of well-strung and vigorous stamina, which, at the same time, have so little of vital coherence, that they are almost ready to drop to pieces, as in some cases of pestilence and scurvy.

The symptoms incidental to an excess of septon in the blood, muscles, and other parts of the human body, are highly worthy of most attentive observation. Its morbid accumulation ought to be noticed with care in all the species of domestic animals. And the signs of too great a collection of it, in sundry kinds of vegetables, ought to be diligently watched. In these ways a vast body of knowledge, interesting by its novelty and its application to theoretical and practical utility, may be amassed.

A large proportion of animals live in a fluid of which three fourths are septous (azotic) gas. Mr. Spalding thinks this is *absorbed* (he probably means *attracted*) in the capillaries, (p. 18 and 23.) and thus enters the blood. This may be the case, but we know of no experiments to prove it. We should rather suppose the septon received through the digestive organs, passed off through the exhalant vessels, and afterwards assumed the form of azotic air; and we think there are facts to convince us of the reality of such a process. But that this matter might be clearly ascertained, we wish the experiments on the changes which air undergoes by respiration to be repeated by some exact hand.

A few observations on the septic (azotic) condition of the solids and fluids in PUTRID FEVERS, conclude this handsome, though short Dissertation.

ART. VII. *Proofs of the Origin of the Yellow Fever, in Philadelphia and Kensington, in the Year 1797, from Domestic Exhalation; and from the foul Air of the Snow Navigation, from Marseilles; and from that of the Ship Huldah, from Hamburgh; in two Letters, addressed to the Governor of the Commonwealth of Pennsylvania. By the Academy of Medicine of Philadelphia. Philadelphia. Bradfords. 1798. 8vo. pp. 49.*

TWO important parts of this publication, viz. the letter from Dr. Rush and his associates to Governor Mifflin, and the memorial of the College of Physicians of Philadelphia to the Legislature of Pennsylvania, have already appeared in the Medical Repository; (see vol. i. p. 405.) which it will be sufficient merely to recall to the consideration of the reader.

The memorial of the College, together with their narrative of facts relative to the origin and progress of the Yellow Fever, is followed by another letter from the above-mentioned gentlemen, organized into the Academy of Medicine, to the Governor, in which they oppose the opinions contained in the memorial, and the statement of facts exhibited by the College.

Great force, both of testimony and reasoning, is adduced by the Academy, in combating the opinions and allegations of the College. We agree with the Academy in supposing that the quantity of filth and putrefaction in and about the city, and the foul air issuing from the holds of the snow Navigation and the ship Huldah, are sufficient to account for all the phenomena, without the intervention of foreign contagion. And, when facts shall be more minutely scrutinized, we think it probable that the importers and non-importers of febrile infection will find ground of compromise, as to a considerable portion of miasma, in the noxious exhalations from the holds of ships; as we are acquainted with no sources where miasma would be more likely to originate than in the close, unventilated holds of vessels, loaded with perishable articles, after long voyages, and thrown open to an heated atmosphere.

The Academy remark, "that many recent facts and observations render it probable, that the reports of the contagious nature of the Yellow Fever have been exaggerated, and that it is not so often propagated by contagion as has been supposed." The whole series of facts alledged by the Academy appears to us to militate against the contagious quality so strenuously contended for; and we hope this concession, corroborated by the decided assertion of the College, "that a malignant remittent fever has never, to their knowledge, been contagious in this climate," will speedily reduce the doctrine of contagion within narrower, more just, and more definite limits.

ART. VIII. *An Inaugural Dissertation, shewing in what Manner Pestilential Vapours acquire their Acid Quality, and how this is neutralized and destroyed by Alkalis, &c. &c.* By Adolph C. Lent, Citizen of the State of New-York. T. and J. Swords. 1798. 8vo. pp. 54.

THIS piece is a continuation of the DOCTRINE OF SEPTON, started by the Professor of Chemistry in the College of New-York; of which we gave some account in our first volume, No. II. p. 236, in the sixth article of our review. Under our head of foreign news, in p. 262, of the same volume, our readers will recollect we announced that several writers in Germany had adopted Dr. Mitchill's principle, and had applied it to explain the distempers of domestic animals. We have since seen, in the *Bibliothèque Britannique* (No. XVIII. and XIX.) of Geneva, a long review and discussion of the subject in that part of Switzerland. And more recently still, we observe it mentioned with respect by Dr. Trotter, physician to lord Howe's fleet, in that part of his valuable work entitled *Medicina Nautica*, which treats of contagion, and the method of subduing it (p. 246.) The reception, in England, of the doctrine advocated in this Dissertation, has apparently been more cold and neglectful, by reason of its direct repugnancy to the practice of fumigating with nitrous acid vapour to destroy infection, and the swallowing nitric acid to overcome venereal virus, which had, of late, pre-occupied the minds of men of philosophical speculation and experiment in Great-Britain, and which still appears to bias the judgment of the sensible conductors of the Monthly Review, as we judge, by the drift of their objections to the principle maintained in the *Dissertation on Dysentery*, reviewed by them in p. 553, of their 23d vol. for 1797. From all we can collect, the question of contagion, and the mode of destroying it by nitrous acid and its vapour, is now in full discussion among the English; their efficacy being positively maintained by some, and as roundly denied by others. In this state of things it would be needless in us to anticipate events. Truth never fails to gain ground by fair experiments; and we leave it to experiments, to convince the advocates of acid fumigations, &c. that they are wrong.

Mr. Lent, in the Dissertation before us, pursuing the same train of thinking that had been adopted by his predecessors, *Saltonstall* and *Bay*, considers septon the basis of pestilential fluids, and oxygen the ingredient which gives it activity; and, of course, these fluids, in their most active state, being acids, they are most effectually to be restrained and quelled by *alkalis*.

As the author frequently refers to the pieces written by Dr.

Mitchill, whose doctrine he has avowedly espoused; and as these pieces, published from time to time, have never been collected into a volume, we shall lay before our readers a list of such of them as we recollect, in the order of their publication. And we do this the rather, as we observe few of them have been much read, either in America or Europe. It may serve as an index for those who are curious enough to investigate the subject to the bottom.

1. Remarks on the gaseous oxyd of azote, in which the principle is stated, and the Nomenclature reformed; published during the plague of 1795, in New-York, and since re-printed in the Appendix to one of Dr. Beddoes's Volumes on Factitious Airs.

2. Letter to Dr. E. Miller, January 20, 1796; containing an application of the principle to explain how the *materials of human habitations* are affected.

3. Letter to John Stevens, Esq. February 16, 1796; on the manner in which pestilential fluids operate upon *water*.

4. Letter to Mr. Chancellor Livingston, February 23, 1796; on the decomposition of pestilential fluids by *vegetation*. These three were read before the Agricultural Society of New-York.

5. A theory of fever, contained in the last chapter of Saltonstall's dissertation on septon, published in May, 1796.

6. Letter to Simeon De Witt, Esq. June 14, 1796; on the operation of septic fluids on the human body, particularly as influencing the *types and crises of fevers*.

7. Letter to Dr. L. Valentin, June 20, 1796; application of the principle to meteorology, and deducing therefrom a *theory of hail*.

8. Letter to J. N. Havens, Esq. August 1, 1796; on their operation upon the *blood, blood-vessels and hearts of living animals*.

9. Letter to Professor Maclean, August 16, 1796; an examination of the experiments made, in France and England, to *destroy contagion by fumigation with marine and nitrous acids*.

10. Letter to Professor Hope, October 10, 1796; application of the doctrine to explain *certain diseases of the teeth and bones*.

11. Letter to H. Muhlenberg, D. D. October 24, 1796; on *septon as a manure*, intended as a supplement to Mr. Kirwan's pamphlet on manures.

12. Letter to Sir John Sinclair, November 28, 1796; on the *affinities and relations of septic fluids to various other bodies*.

13. Letter to Dr. Percival, January 17, 1797; application of the *principle to the Materia Medica*, particularly as respects alkaline and neutral salts. These may be found in Swords's New-York Magazine, for July, August, October, November, and December, 1796, and for January, February, and April, 1797. We purpose to insert them occasionally in the appendix of our Repository.

14. The case of the manufacturers of soap and candles, in the city of New-York, stated and examined; wherein the relations of *septic fluids to oil, soap, lime, pot-ash, and soda*, are particularly inquired into. A pamphlet published in May, 1797.

15. Remarks on manures, shewing the connection between farming and physic, and containing a *theory of the operation of gypsum*. Intended as a sequel to Peters's publication on that substance, July 1, 1797.

16. Letter to Dr. Beddoes, September 15, 1797; on the operation of *alkalies and lime*. To be found in the first and second numbers of the first volume of the Medical Repository.

17. Letter to Dr. Haworth, 1797; containing a sketch of medical geography, on the *exemption of tracts of country underlaid with calcareous earth from pestilential distempers*. Printed in the present number.

18. Letter to Miss ———, November 10, 1797; contrasting the method of preventing infection, &c. by *prudent housewives*, with that practised by *modern philosophers*, in Swords's Magazine for December, 1797.

19. A summary of the doctrine, printed in Mr. Webster's Collection of Papers, on bilious fevers, prevalent in the United States, Article VII.

Although we find few new ideas advanced in this dissertation, yet the experiments of Mr. Eaglefield Smith, quoted in p. 20, and printed in the Appendix, shew the highly noxious effect of *nitrous acid*, when applied to the naked nerves and muscular fibres. In this respect, resembling the poisons of serpents, and various other venomous fluids; which, though deleterious and deadly when infused in *bleeding wounds*, are capable of being taken into the *stomach* in considerable quantities, without inconvenience. This is a point of view, in which the whole of pestilential and other poisons ought to be considered.

We perceive, however, that Mr. Lent has acquitted himself in this dissertation, with industry. His method and arrangement give perspicuity to the subject. The performance may, therefore, be considered as a compendium of that part of the subject on which he has undertaken to treat, and as such we recommend it to those who are desirous of becoming acquainted with the very interesting and important doctrine which he supports.

ART. IX. *A Treatise on the Scarlatina Anginosa and Dysentery; and Sketches on Febrile Spasm, as produced by Phlogiston.* By Israel Allen, M. D. Leominster, (Massachusetts). Prentiss. 1796. 8vo. pp. 60.

THE apology offered by the author for this publication is, that the medical art may be improved by the practical observations of physicians; and that, in publishing his pamphlet, he had complied with a request of the Medical Society of Massachusetts, to all practitioners of physic, to make observations on epidemic distempers.

On this subject, we learn from Mr. Allen, that in the years 1795 and 1796, a series of endemics, or epidemics as they are called, prevailed in the town where he resides, and that these were, *chicken-pox, whooping-cough, scarlatina anginosa, and dysentery.* This may be considered as the most important observation in the whole treatise, and one which exhibits very strikingly, the analogy there is between all these forms of disease, designated by such different names. In the progress of inquiry, it will probably be found, that these epidemics are the offspring of one general cause, modified by age, season, sex, part of the body which it invades, and a multitude of other circumstances.

Another remark of the author, which we think worthy of note, is, "that he never could be satisfied whether it (*scarlatina anginosa*) was contagious or not. At one time, when it entered a family, one would have it; at another, two; at another, all. At one time, it appeared to follow in a week or less after being exposed; and at another, not till after four or five; and many had it without ever being in any way near an infected person." The infectious quality is, therefore, in all probability, not greater than in Yellow Fever; which, except in the air of a contaminated place, seems not to be infectious at all.

Mr. Allen observes, in p. 15, that out of one hundred and fifty persons who had had the distemper, a large proportion were children, and of this number eight died.

The following description strongly indicates the state of the fluids in some of the worst forms of *scarlatina anginosa*, "an acrimonious saliva discharges from the mouth, an acrid mucus from the nose, very eroding to the skin, and a sanies from the ears; the face, hands and feet are bloated; the tonsillar and parotid glands, tumid, &c." These symptoms may possibly have some similitude to the salivation, tumid limbs, and other symptoms of some forms of sea-scurvy. And it may deserve the curious attention of some philosophical inquirer, to compare the salivation which occurs in these diseases and others, (as the small-pox, &c.) with

that which is known to be excited by mercurials and certain acids, and which has been asserted to follow the exhibition of various other articles of the *Materia Medica*.

In his method of cure, Mr. Allen appears to be a vigilant and careful attendant of the sick. The directions and prescriptions seem generally well advised; though the administration of tobacco to remove obstinate spasm, has somewhat dubious in it. Yet as the author recommends it upon respectable authority, we shall give the recipe in his own words: "Take tobacco, senna, and anise-seeds, of each two ounces; boil them in water to the consistence of molasses: add cathartic species sufficient to bring it to a consistence for pills: as scammony, colocintida, aloes, and rhubarb, equal parts. Two pills, of common size, were generally sufficient to ease the pain and operate as a gentle and safe purge, in an hour, or, at least, in the usual period." Our practical readers may try the formula, if they like it.

Passing from scarlatina to dysentery, Mr. Allen, without hesitation, assigns a cause of the disease. This we shall quote, that our readers may have a specimen of his philosophical acumen. "The cause of this fever (dysentery) is a precipitation of the fixed air, from an excess of phlogiston in the surrounding atmosphere. The heat being particularly exerted on the intestines, produces an increased exhalation and discharge, and an immediate tendency to mortification, especially in young children." And this we suppose will be sufficient.

As to what remains of this pamphlet, the *medical sketches* on heat and phlogiston, as agents in producing spasm, contain nothing interesting enough to detain our readers, or to induce us to enlarge the present article.



METEOROLOGICAL OBSERVATIONS for April, 1798,
made by GARDINER BAKER, in the Cupola of the Exchange, in
the City of New-York.

Days of the Mon.	Thermom. observed at		Prevail. winds.		Clear.	Cloudy	Barometer observed at	
	Sun-rise.	2 P. M.	S. r.	2 E.			Sun-rise.	2 P. M.
1	55	67	S	SW	1	1	29 57	29 55
2	44	42	N	N E		2	29 60	29 58
3	37	37	N	N E		2	29 64	29 75
4	36	39	N	N E		2	29 91	29 97
5	38	53	N	N E	1	1	29 98	29 95
6	40	60	N	N E	2		29 93	29 93
7	39	53	N	N E	1	1	29 87	29 80
8	55	63	NW	NW	1	1	29 75	29 73
9	44	55	S	S E	2		29 82	29 82
10	42	55	E	S E	1	1	29 73	29 62
11	53	51	E	S E		2	29 32	29 14
12	43	48	SW	S E		2	29 5	29
13	42	52	S	S E	1	1	29 18	29 10
14	44	51	W	SW	1	1	29 7	29 3
15	35	48	W	W	2		29 23	29 31
16	34	41	NW	NW	1	1	29 45	29 42
17	26	36	NW	NW	2		29 50	29 52
18	36	52	NW	NW	2		29 72	29 90
19	40	51	W	S E	2		29 89	29 87
20	42	50	E	E	1	1	29 83	29 68
21	54	62	S	S	1	1	29 51	29 45
22	52	62	SW	W	2		29 40	29 42
23	49	61	S	S E		2	29 51	29 25
24	46	61	NW	S	2		29 71	29 80
25	47	57	S	S	2		30	30 6
26	50	60	S	S E		2	29 93	29 88
27	50	67	E	S E	2		29 83	29 76
28	52	66	E	S E	2		29 85	29 80
29	55	69	S	S	2		29 89	29 90
30	55	67	S	S E	2		29 90	29 84

Results of Meteorological Observations for April, 1798.

Mean temperature of the Thermometer at sun-rise, deg. 44 5 hund.
 Do. do. of the do. at 2 P. M. 54 5
 Do. do. of the do. for the whole month, 49 5
 Greatest monthly range between the 17th and 29th, 48 0
 Do. do. in 24 hours, between 17th and 18th, 26 0
 Eight days it rained, and a very large quantity has fallen.
 One day it snowed, and two inches have fallen.
 Coldest day the 17th. Warmest day the 29th.

METEOROLOGICAL OBSERVATIONS for May, 1798.

Days of the Mon.	Thermom. observed at		Prevail. winds.		Clear.	Cloudy	Barometer observed at	
	Sun-rise.	2 P. M.	S. r.	2 E.			Sun-rise.	2 P. M.
1	58	76	S	S	2		29 73	29 63
2	59	66	S	S	1	1	29 60	29 56
3	54	71	S W	S	2		29 63	29 59
4	62	69	S	S	1	1	29 57	29 47
5	62	79	S	S W	2		29 33	29 20
6	61	72	S W	N W	1	1	29 20	29 15
7	55	69	W	W	2		29 36	29 33
8	53	67	N W	N W	2		29 50	29 51
9	55	73	W	W	2		29 50	29 43
10	53	62	W	S	1	1	29 58	29 50
11	50	55	N	N	1	1	29 43	29 43
12	46	61	N	E	2		29 60	29 64
13	49	62	N E	N E		2	29 70	29 70
14	52	59	N E	E		2	29 71	29 70
15	51	67	N	E	1	1	29 63	29 51
16	55	69	E	N	2		29 57	29 60
17	52	67	W	S	2		29 70	29 60
18	60	67	N	N	2		29 70	29 87
19	51	66	E	S	2		30 13	30 17
20	54	70	S W	S	2		30 17	30 15
21	56	69	S W	S	2		30 10	30 7
22	60	77	S W	S W	2		30	29 88
23	64	76	S W	S W		2	29 80	29 70
24	62	73	N	S	2		29 74	29 71
25	64	64	S	S		2	29 50	29 36
26	54	64	N W	N W	2		29 65	29 76
27	53	63	N E	S E	2		29 98	30
28	57	59	N E	N E		2	29 75	29 48
29	58	63	N E	N E		2	29 32	29 32
30	60	70	S E	E		2	29 39	29 42
31	62	65	S E	S E	1	1	29 43	29 47

Results of Meteorological Observations for May, 1798.

Mean temperature of the Thermometer at sun-rise, deg. 56 19 hund.
 Do. do. of the do. at 2 P. M. 67 45
 Do. do. of the do. for the whole month, 61 82
 Greatest monthly range between the 5th and 13th, 30 0
 Do. do. in 24 hours, on the first, 18 0
 Seven days it rained, and a very large quantity has fallen.
 One day it thundered and lightened a small quantity.
 Coldest day the 13th. Warmest day the 5th.

METEOROLOGICAL OBSERVATIONS for June, 1798.

Days of the Mon.	Thermom. observed at Sun-rise.	Thermom. observed at 2 P. M.	Prevailing winds. S. r. 2 E.	Clear.	Cloudy	Barometer observed at Sun-rise.	Barometer observed at 2 P. M.
1	61	71	S S W	2		29 49	29 46
2	64	79	S W S W	1	1	29 41	29 41
3	66	81	S W	2		29 40	29 50
4	68	72	W S E		2	29 60	29 57
5	67	76	S S	1	1	29 43	29 38
6	69	74	S W S	1	1	29 44	29 45
7	65	77	W W	1	1	29 40	29 44
8	64	78	N W S W	2		29 58	29 53
9	64	82	W S W	2		29 53	29 53
10	60	68	E S E	2		29 84	29 84
11	59	66	E E	1	1	29 72	29 70
12	62	73	E E	2		29 60	29 62
13	64	69	S E S E		2	29 66	29 66
14	67	80	S S	2		29 66	29 68
15	65	80	N S W	2		29 70	29 70
16	62	71	N W S E	2		29 60	29 64
17	58	67	E S E	2		29 75	29 85
18	60	73	E S E	2		29 90	29 81
19	65	77	S E	1	1	29 84	29 80
20	67	72	E N E		2	29 68	29 60
21	70	80	E S	1	1	29 43	29 43
22	65	77	N E S E	1	1	29 52	29 52
23	74	83	S W	2		29 55	29 53
24	74	83	S W S W	1	1	29 60	26 69
25	71	79	N W S		2	29 66	29 60
26	70	74	N N	1	1	29 60	29 66
27	64	78	N S	1	1	29 67	29 68
28	67	80	S W S	1	1	29 73	29 68
29	70	80	S W S W	1	1	29 54	29 48
30	66	77	N W S	2		29 68	29 70

Results of Meteorological Observations for June, 1798.

Mean temperature of the Thermometer at sun-rise, deg. 65 6 hund.
 Do. do. of the do. at 2 P. M. 75 9
 Do. do. of the do. for the whole month, 70 7
 Greatest monthly range between the 17th and 24th, 25 0
 Do. do. in 24 hours, on the 9th, 13 0
 Seven days it rained, and a considerable quantity has fallen.
 Twice it thundered and lighned, but little.
 Coldest day the 17th. Warmest day the 24th.

A TABLE exhibiting the number of Patients received into the New-York Hospital, in each month; their Diseases, and the event of each Case.

April, 1798.

DISEASES.	Remain. from last Month.	Receiv. this Month.	Cured.	Died.	Dis. Dis. and Eloped.	Under Care.
MEDICAL.						
Rheumatism	3	1	1			3
Syphilis	4	2	1		1	4
Pneumonia	7	3	1	1		7
Mania	7					7
Ascites	2			1		1
Anasarca	1					1
Dyspepsia	1					1
Catarrh	3		1			2
Intermit. Fever		1	1			
Diarrhœa		1				1
Debility	1	1	1			1
Palsy	1					1
Hemoptisis		1	1			
Enteritis		1				1
Hepatitis		1				1
Constipation		1			1	
Hysteria		1				1
Febris	1					1
SURGICAL.						
Sore Legs	17	2	3			14
Syphilis	6	4			3	7
Frozen Limbs	8	3				11
White Swelling	3		2			1
Burn	1					1
Wound	1	1	1		1	
Cataract		1			1	
Fracture	2	1	1			2
Tumor		1				1
Ophthalmia	1					1
Disordered Spine	1					1
Scrophula	1		1			
Fistula in Ano	1					1
Cancer	2					2
Empyema	1			1		
Contusion		2	2			

HOSPITAL.

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Result for April, 1798.

Remaining from last month,	77
Received this month,	29
	<hr/> 106
Cured,	17
Relieved,	3
Died,	3
Discharged disorderly,	2
Eloped,	5
Under care,	76—106

May, 1798.

DISEASES.	Remain. from last Month.	Receiv. this Month.	Cured.	Reliev.	Died.	Dis. Dif. and Eloped.	Under Care.
MEDICAL.							
Rheumatism	3	3					0
Syphilis	4	2				I	5
Pneumonia	7	3	5				5
Mania	7	4	2				9
Ascites	I	I					2
Gonorrhœa		3	2				I
Anasarca	I						I
Dyspepsia	I						I
Catarrh	2						2
Diarrhœa	I						I
Debility	I	I		I		I	
Palsy	I	I					2
Enteritis	I						I
Hepatitis	I		I				
Hysteria	I						I
Febris	I	I	I				I
Physconia Splen.		I					I
Scrophula		I					I
Scorbutus		2					2
Febris Intermit.		I					I
SURGICAL.							
Sore Legs	14	4	7				11
Syphilis	7	4	2				9
Frozen Limbs	11		I				10
White Swelling	I						I
Burn	I						I
Cataract		I					I
Fracture	2		I				I
Tumor	I	2	I				3
Ophthalmia	I	2	I				2
Fistula	I						I
Cancer	2		2				
Contusion		2					2
Disordered Spine	I						I

A RETURN of Patients admitted to the care of the New-York City Dispensary, from the 1st of April to the 1st of July, 1798.

APRIL.

DISEASES.	No.	Cured.	Reliev.	Died.	Removed &c.	Result.
Dyspepsia	1	1				
Vomica	1	1				Received 43
Erysipelas	3	3				
Diarrhœa	1			1		Cured 41
Psora	2	2				Died 1
Sore Legs	4	3			1 u. care.	Under care 1
Catarrhal Fever	2	2				—43
Dysentery	2	2				
Abscess	1	1				
Wound	1	1				
Contusion	1	1				
Small-pox	12	12				
Amenorrhœa	1	1				
Worms	2	2				
Bilious Colic	1	1				
Pleurodyne	2	2				
Syphilis	3	3				
Rheumatism	1	1				
Luxation	1	1				
Hæmoptisis	1	1				

MAY.

Rheumatism	2	1			1 r. A.H.	
Parturition	1	1				
Mumps	1	1				
Menorrhagia	1	1				
Small-pox	8	8				
Intermittent Fever	1	1				
Worms	1	1				
Herpes	2	2				
Syphilis	3	3				
Typhus Ictericus	1			1		
Phthisis Pulmonalis	1				1 u. care.	
Pneumonia	5	5				
Pneumonia Notha	1			1		
Burn	1	1				
Scrophula	1	1				
Remittent Fever	2	2				
Leucorrhœa	2	2				

DISPENSARY.

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MAY continued.

DISEASES.	No.	Cured.	Reliev.	Died.	Removed &c.	Result.
Sore Legs	2	1	1			Received 43
Dropsy	2				2 u. care.	—
Exomphalos	1		1			Cured 35
Convulsions	1	1				Relieved 1
Contusion	1	1				Died 2
Ophthalmia	1	1				Alms-h. 1
Dysentery	1	1				Und.car. 4—43

JUNE.

Herpes	5	3			2 u. care.	Received 44
Dyspepsia	1	1				—
Gastrodynia	1	1				Cured 34
Syphilis	4	3			1 u. care.	Relieved 1
Leucorrhœa	1	1				Died 1
Rheumatism	2	2				Under care 8
Wounds	4	4				—44
Croup or Hives	1			1		
Diarrhœa	1	1				
Bilious Colic	1	1				
Pneumonia	1	1				
Bilious Fever	2	2				
Cholera	1	1				
Convulsions	1				1 u. care.	
Dysentery	1				1 u. care.	
Asthma	1	1				
Sore Mouth	2	2				
Lumbago	1	1				
Cephalalgia	2	2				
Anthrax	1				1 u. care.	
Catarrh	1	1				
Pleurodyne	1	1				
Contusion	1	1				
Amenorrhœa	1	1				
Ophthalmia	1	1				
Parturition	1	1				
Luxation	2	1			1 u. care.	
Hætic Fever	1		1			
Scrophula	1				1 u. care.	

SUMMARY.

Admitted,	130
Cured,	110
Relieved,	2
Died,	4
Removed to the Alms-House,	1
Under Care,	13
Total	130

HUGH McLEAN.



MEDICAL, PHILOSOPHICAL, & ECONOMICAL NEWS.

DOMESTIC.

NOTWITHSTANDING the uncommon duration and severity of the last winter, which led many reflecting and intelligent physicians to expect a dry, sultry, and sickly summer, the season, hitherto, with the exception of a very few extreme hot days, has been remarkably cool and rainy, and free from sickness. Letters from all parts of the United States concur in representing the condition of the country as unusually healthy.

Among domestic animals, however, we have still to notice the continuance of the *rabies* among dogs, in some parts of Connecticut. Considerable mischief has been committed by them, among horned cattle and sheep, in the towns of Farmington, Berlin, and Middletown, since the publication of our last Number. Few accidents, as far as we can learn, have happened to men. In the town of Berlin, however, an instance of canine madness, in a young man of that place, has occurred, from the bite of a mad dog, the successful treatment of whose disease, seems to establish the efficacy of mercury, at least in some cases of that formidable calamity. We defer any mention of particulars at present, from an expectation of being soon able to gratify the public curiosity on this subject, by a full recital of all the facts by Drs. S. and J. Wells, of that town, under whose direction the remedy was so beneficially applied.

The AMERICAN ACADEMY OF ARTS AND SCIENCES have elected the following officers for the present year.

JOHN ADAMS, LL. D. *President.*

JOSEPH WILLARD, D. D. *Vice-President.*

The Hon. R. T. PAINE, FRANCIS DANA, BENJAMIN LINCOLN, and JOHN LOWELL, Esquires, JOHN LATHROP, D. D. JOHN WARREN, M. D. Hon. LOAMMI BALDWIN, CALER GARNET, Esq. and PROFESSOR WEBBER, *Counsellors.*

JOHN DAVIS, Esq. *Recording Secretary.*

Mr. PROFESSOR PEARSON, *Corresponding Secretary.*

REV. JAMES FREEMAN, *Treasurer.*

Hon. G. R. MINOT, *Vice-Treasurer.*

REV. JOHN LATHROP, D. D. *Librarian & Cabinet-Keeper.*

At a meeting of the Massachusetts Medical Society, June 6, 1798, the following persons were elected officers for the year ensuing:

Isaac Rand, *President.*

Hon. Ebenezer Hunt, *Vice-President.*

Thomas Welsh, John Warren, M. D. William Eustis, Joshua Barker, Aaron Dexter, M. D. William Spooner, M. D. and Josiah Bartlett, M. B. *Counsellors.*

John Warren, M. D. *Corresponding Secretary.*

John Fleet, jun. *Recording Secretary.*

Thomas Kast, *Treasurer.*

William Spooner, M. D. *Librarian and Cabinet-Keeper.*

Thomas Kast, Joseph Whipple, Josiah Bartlett, William Spooner, and John Homans, *Censors.*

John Bartlett of Roxbury, and Isaac Hurd of Concord, were elected *Fellows.*

Mr. Webster, whose work on *Epidemics* may be expected in the course of the autumn, has lately issued the following circular letter.

CIRCULAR.

To the Clergymen or other well-informed Gentlemen in the several Towns in Connecticut.

"GENTLEMEN,

"No object can be more interesting to curiosity, or useful to the public, than a knowledge of the arts, agriculture, manufactures, and improvements of every kind, in the society to which we belong. Improvements in science are often slow, for want of publicity; and nothing will more directly facilitate the progress of practical knowledge, than a collection and communication of the items of experience which individuals are able to furnish.

"A statistical account of the United States is, and probably will, for a long time, remain a desideratum among the lovers of useful knowledge. But the State of Connecticut, compact in its form, and distinguished for the information, industry, and sober habits of its citizens, presents an inviting object to curiosity, without the objections which other parts of the American Republic offer to an attempt of this kind.

"I have some leisure and great inclination to be instrumental in bringing forward a correct view of the civil and domestic economy of this State; and if you will furnish me with the materials, I will arrange and publish them in a form that will, at least in part, supply the present defect of such a work.

"The particulars on which I request information, among others, which will occur to you, are the following.

"The name, extent, boundaries and quantity of land and water

in each town—with the time and mode of settlement. Indian names of rivers and mountains.

“Proportion of woodland, pasture, mowing and plough-land.

“Description of the soil.

“Mountains, hills, rivers, valleys, and whether waste or cultivated.

“Lakes, ponds, and on the sea coast, islands.

“State of health—climate and diseases.

“Bills of mortality, comprehending the ages and diseases, where it can be done.

“The years when remarkable sickness has prevailed, and the diseases.—Instances of longevity.

“Mode of cultivation, as to order of crops—species of manure used—produce of crops by the acre.

“Expence of tillage—value of land—price of labour, provisions, and produce.

“Remarkable instances of good and bad seasons.

“Trade and manufactures of the town—articles of export.

“Number of vessels, and seamen belonging to the town, and the produce of the fisheries.

“Harbours, ferries, roads and bridges—expence of repairs, and the mode of making them.

“Number of taverns.—Police of the town—number of poor—how provided for—and the expence.

“State of the churches and schools.

“Number of churches, their ministers—and the list of all, from the first settlement, with their times of settlement and exit.

“Number of winter and summer schools—expence of supporting them.—Academies, or grammar schools.

“Number of families and souls—number of houses—state of domestic manufactures.

“Mines, ore, minerals—mineral springs—has marble been discovered in the town, or coal or peat for fuel?

“Any curious or important information not falling under any of the foregoing heads, and other miscellaneous observations.

“I request the state of health, diseases and epidemics, with the bills of mortality, to be forwarded to me at New-Haven, by the first day of July next—Information under the other heads will be in time, if sent by the first of January, 1799.

“I am, Gentlemen,

“Your obedient Servant,

“N. WEBSTER, jun.

“P. S. Those towns which furnish the information requested will receive a copy of the work.

“*New-Haven, May 7, 1798.*”

It deserves to be mentioned, as an incentive to similar undertakings in the different States, that the proposed editor has already received some materials for his intended work, and that there is the best reason to expect, from him and his correspondents, the amplest satisfaction, that circumstances will permit, on the several subjects proposed for investigation.

We learn, from New-Haven, that an useful machine has been lately invented by Mr. Abel Buel, of that city, for the purpose of planting onions. It is represented as very simple in its construction, and as having been found, on experiment, very greatly to abridge labour; so much so as to enable one man to perform, in the same time, the labour of twenty. It moves upon wheels, and can be easily drawn by one person. It opens the trenches, drops the seed, and covers them, at one operation. A machine which performs the same thing in the planting of corn, we are told, has been invented in the State of Vermont; and that a gentleman who was in New-Haven a few days since, is about coming to Philadelphia for a patent for the invention.

[*Weekly Magazine.*]

At the Annual Commencement of *Columbia College*, which was held the second of May, the degree of Doctor of Physic was conferred on Mr. Adolph C. Lent, of the State of New-York; some account of whose Inaugural Essay is given in our REVIEW for the present number.

The MEDICAL LECTURES in COLUMBIA COLLEGE commence, annually, on the second Monday of November, on the following branches:

Chemistry and Natural History, by Professor Mitchill.

Anatomy and Surgery, Post.

Midwifery and Infantile Diseases, Rodgers.

Theory and Practice of Physic, Hammersley.

Materia Medica and Botany, Hosack.

Regular *Clinical Lectures* are also given by Dr. Rodgers, in the New-York Hospital; which is furnished with a valuable collection of medical books.

Since the publication of the last number of the *Repository*, an Association has been formed in the city of New-York, for "the investigation of the Mineral and Fossil bodies which compose the fabric of the Globe; and, more especially, for the Natural and Chemical History of the Minerals and Fossils of the United States," by the name and style of THE AMERICAN MINERALOGICAL SOCIETY. The present officers of the Society are—

Samuel Latham Mitchill, *President.*

Solomon Simpson, *Vice-President.*

E. H. Smith, *Secretary.*

Edward Miller, *Treasurer.*

Samuel L. Mitchill, *Librarian and Cabinet-Keeper.*

Samuel M. Hopkins, George J. Warner, Samuel L. Mitchill,
Committee.

The Committee have already published, by the Society's direction, the following advertisement:

AMERICAN MINERALOGICAL SOCIETY.

The AMERICAN MINERALOGICAL SOCIETY, instituted in the city of New-York, desirous of obtaining and diffusing, by every means in their power, a correct and extensive knowledge of the mineral treasures of their country; and considering the importance of certain species of information, at the present time, earnestly solicit their fellow-citizens of the United States to communicate to them, on all mineralogical subjects, but especially on the following, viz.

1. Concerning the stones suitable to be manufactured into *gun-flints*: where they are found? and in what quantity? with samples of the material for experiment.

2. Concerning *native brimstone or sulphur*, or the waters or minerals whence it may be extracted: a description of the tracts of country where sulphur, or sulphureous springs and ores abound; with probable estimates of the practicability of collecting or extracting the sulphur economically; and with specimens of the native ingredient for trial.

3. Concerning *salt-petre*: where (if at all) found native? or the soils which produce it in the United States? of what extent? in what proportion? the mode of extracting or refining it? with specimens of native earth or salt for examination.

4. Concerning mines and ores of *lead*: in what places? the situation? how wide the vein? in what kind of rock it is bedded? with pieces of the ore for assaying.

Specimens of ores, metals, coals, spars, gypsums, crystals, petrifications, stones, earths, slates, clays, chalks, lime-stones, marbles, and every fossil substance that may be discovered or fall in the way of a traveller, which can throw light on the mineralogical history of America, examined and analyzed without cost: sufficient pieces, with the owner's leave, being reserved for placing in the Society's collection.

Specimens of any of the above-mentioned articles, or information concerning any of them, may be forwarded (free of expence), and will be thankfully received and duly attended to by the subscribers.

Samuel L. Mitchill, Columbia College,
 George J. Warner, No. 70 Maiden-lane, } *Committee.*
 Samuel M. Hopkins, No. 36 Pine-street,
New-York, July 20, 1798.

Having referred to certain parts of the present law of this State, relative to the prevention of infectious and pestilential diseases, and for the information of those who may not have seen the act referred to, it is thought proper to insert the material parts in this place.

An Act to provide against infectious and pestilential Diseases. Passed the 30th of March, 1798.

Be it enacted by the People of the State of New-York, represented in Senate and Assembly, That there shall be three persons appointed Commissioners of the Health-Office of the city of New-York; who shall assemble from time to time as occasion may require, at the Health-Office, for the execution of the business to them by this act entrusted; and that a person practising physic, shall be appointed Health-officer of the said city, who shall, by virtue of his appointment, always be a member of the said office: Provided always, that the several persons now holding and exercising the office of Health-Officer and Commissioners of the Health-Office of the city of New-York, shall and may continue in their respective offices until others shall be appointed in their stead.

And be it further enacted, That it shall be lawful for the said Commissioners of the Health-Office, or a majority of them, as they shall judge advisable, to make and execute rules and orders for cleansing and scouring the streets, alleys, passages, curtilages, sewers, yards, cellars, vaults, sinks, and other places where filth and corruption collect within the said city, and for removing all offensive, noxious, or putrid articles or substances which may be stored or otherwise collected within the said city; and all necessary expences for carrying the said rules and orders into effect, where the same relate to the cleansing of such places as are not the property of private individuals or citizens, shall be deemed as part of the contingent expences of the said city, and the monies for defraying the same shall be raised in like manner as the other contingent expences of the said city; and where the same shall relate to the cleansing of such places as are the property of individuals or citizens, such expences shall be paid by the owners or proprietors, or occupiers, or possessors thereof: Provided all such rules or orders shall be reported to, and may be suspended or repealed at any time, by the person administering the government of this State.

And be it farther enacted, That whenever the city of New-York, or any part thereof, shall be annoyed or rendered foul by any

manufactory, trade, work, or business, producing noxious vapours, or highly offensive smells, or by any place where noxious or putrid substances shall be stored or collected within the said city; it shall be the duty of the said Commissioners, or a majority of them, if in their opinion the public health, or that of individuals shall be endangered thereby, to proceed forthwith to such place or places as aforesaid, and to make due inquiry and strict examination respecting the same; and to this end it shall be lawful for them, or either of them, whenever it may be necessary to require the aid or assistance of a justice of the peace and constable in making such inquiry and examination, who are hereby authorised and required to break open, whenever admittance cannot otherwise be obtained, the door or doors of such place where such manufactory, trade, work, or business is carried on, producing or affording such noxious vapour or highly offensive smell, or where such offensive substances are deposited; and if the said Commissioners, or a majority of them, shall judge any such manufactory, trade, work, business or repository, to be carried on or kept in such manner as to be a nuisance, they shall declare it so in writing to the owner or proprietor thereof, or in his absence, to such workman, clerk, keeper, or one of the family, as they may then find on the premises; and at the same time shall require the removal, abatement, or discontinuance of the said nuisance, as the case may require, within a time to be limited in the said writing; and if on the expiration of the said time, the same order shall not have been complied with, it shall be the duty of the Mayor or Recorder of the said city, upon representation thereof to either of them, made by the said Commissioners, or a majority of them, immediately to issue a warrant under the hand and seal of the said Mayor or Recorder, directed to the Sheriff of the said city, commanding him forthwith and without delay, to cause to be removed, abated or discontinued, such nuisance; and the person to whom such declaration and requisition in writing as aforesaid shall be made, shall besides, for not complying therewith, be considered as guilty of a misdemeanor; and on complaint being made thereof in writing, by any one or more of the said Commissioners, to any one of the justices of the peace of the said city, it shall be the duty of such justice to bind the person so complained of in a recognizance, with sufficient surety, in the sum of two hundred dollars, for his appearance at the then next general sessions of the peace in the said city, to answer to the said charge; and on due proof thereof, it shall be lawful for the said court to impose a fine on the person or persons so offending, in a sum not exceeding one hundred dollars; out of which fine, the expences of removing, abating, or causing to be discontinued such nuisance, shall be paid.

The remainder of the act is devoted to the usual provisions for quarantines, penalties, &c.

We understand that Dr. Benjamin De Witt, of Albany, the author of the paper on the deleterious effects of *Stramonium*, inserted in the present Number, intends speedily to publish a treatise on all the principal mineral and medicinal waters in the State of New-York. It is certain that few places abound with so many and such valuable mineral waters as the northern parts of this State; and it is equally certain that no general history has hitherto been given of their composition, or of the useful purposes they are fitted to serve.

ENTOMOLOGY.

With pleasure we announce to naturalists, Mr. Baker's collection of American insects. In his Museum at New-York, may be seen about three thousand species, principally arranged according to the Linnæan system. They were collected chiefly by Mr. JOTHAM FENTON, who has been nearly six years engaged in entomological pursuits. The species of this collection were mostly caught in the neighbourhood of the cities of New-York and New-Haven. For the accommodation of such persons as wish to purchase or exchange, Mr. Fenton has procured eighteen of each species. Complete sets of this collection may therefore be obtained from the proprietor, who is anxious for the cultivation of this branch of natural history. The collection is growing more valuable by additions almost every day, and bids fair to grow to a great size.

The *American Philosophical Society* have recently published the following circular Letter, which we insert with the hope of forwarding their design:

Philosophical Hall, Philadelphia, May 7, 1798.

(CIRCULAR.)

"SIR,

"THE American Philosophical Society have always considered the antiquity, changes, and the present state of their own country as primary objects of their research; and with a view to facilitate such discoveries, a permanent committee has been established, among whose duties the following have been recommended as requiring particular attention.

"1. To procure one or more entire skeletons of the Mammoth, so called, and of such other unknown animals as either have been, or hereafter may be discovered in America.

"2. To obtain accurate plans, drawings and descriptions of whatever is interesting, (where the originals cannot be had) and especially of ancient Fortifications, Tumuli, and other Indian works of art: ascertaining the materials composing them, their contents, the purposes for which they were probably designed, &c.

"3. To invite researches into the Natural History of the Earth, the changes it has undergone as to Mountains, Lakes, Rivers, Prairies, &c.

"4. To inquire into the Customs, Manners, Languages and Character of the Indian nations, ancient and modern, and their migrations.

"The importance of these objects will be acknowledged by every lover of Science, and we trust sufficiently apologize for thus troubling you; for without the aid of gentlemen who have taste and opportunity for such researches, our means would be very confined. We therefore solicit your communications, now or in future, on these subjects; which will be at all times thankfully received, and duly noticed in the publications of the Society.

"As to the first object, the committee suggest, to gentlemen who may be in the way of inquiries of that kind, that the Great Bone Lick on the Ohio, and other places where there may be mineral salt, are the most eligible spots for the purpose, because animals are known to resort to such places.

"With respect to the second head, the committee are desirous that cuts in various directions may be made into many of the Tumuli, to ascertain their contents, while the diameter of the largest tree growing thereon, the number of its annulars and the species of the tree, may tend to give some idea of their antiquity. If the works should be found to be of Masonry; the length, breadth, and height of the walls ought to be carefully measured, the form and nature of the stones described, and specimens of both the cement and stones sent to the committee.

"The best methods of obtaining information on the other subjects will naturally suggest themselves to you, and we rely on a disposition favourable to our wishes.

"The committee consist of the following Gentlemen, viz.

Thomas Jefferson, President of the American Philosophical Society,
at Monticello in Virginia.

James Wilkinson, Commander of the Army, at Head Quarters.

George Turner, of the Western Territory, near Cincinnati.

Dr. Caspar Wistar, Vice-President of the A. P. S.

Dr. Adam Seybert, Secretary of do.

C. W. Peale, and,

Jon. Williams,

} in Philadelphia.

"Your communications may be addressed to any one of the

Committee, but the articles you may think proper to furnish should be sent to this place.

In behalf of the Committee, I am respectfully,

Sir, your obedient servant,

J. WILLIAMS, Chairman."

**ADVERTISEMENT of the CHEMICAL SOCIETY of Philadelphia.
To the Citizens of the United States.**

The Chemical Society of Philadelphia, desirous of diffusing information throughout the United States relative to the manufacturing of Nitre, have appointed a committee to collect, into *one view*, all the different processes carried on for that purpose in different countries.

In pursuance of their appointment, they now take this method of requesting any persons who possess information relative to the manufacturing of this valuable *neutral-salt*, to forward it to them (*post paid*) Information from such persons as carry on manufactures of it, with their results, would be peculiarly acceptable.

They would be obliged to any persons who would furnish them with accurate descriptions of the *situation, soil, temperature, &c. &c.* of those places in which Nitre is found in a *native state*.

Thomas P. Smith, No. 19 North 5th street,
Robert Patterson, No. 148 South 4th street,
John C. Otto, No. 37 North 4th street, } Committee.

At a public commencement held in the *University of Pennsylvania*, on the 22d of May last, the degree of Doctor of Medicine was conferred upon the following gentlemen; who, on this occasion, defended their respective dissertations.

Thomas Horsfield, of Pennsylvania, on the Rhus Vernix, Rhus Radicans, and Rhus Glabrum; commonly known in Pennsylvania by the names of Poison-Ash, Poison-Vine, and Common Sumach:

Philip Gendron Prioleau, A. B. of Charleston, South-Carolina, on the use of the Nitric and Muriatic Acids in some diseases:

John Hahn, of Pennsylvania, on the use of Enemata, and the external application of medicines to the human body:

Thomas Triplett, of Virginia, on Apoplexy:

William Webb, of Virginia, on the Colic:

Isaac Winston, of Virginia, on the Polygala Senega, commonly called Seneka Snake-Root:

James Thurston Hubbard, of Virginia, on Puerperal Fever:

John Claiborne, of Virginia, on Scurvy:

John Archer, jun. of Maryland, on Cynanche Trachealis, commonly called Croup, or Hives:

William Cocke, of Georgia, on Tetanus:

And *James Stuart*, of Virginia, on the salutary effects of Mercury, in Malignant Fevers.

Dr. James Craik, of Alexandria, Virginia, is appointed Physician-General to the army of the United States.

Dr. James Hall is appointed Resident Physician at the Marine Hospital, of the Port of Philadelphia, in the room of Dr. James Mease, resigned.

At a stated meeting of the College of Physicians of Philadelphia, held July 3d. 1798, the following officers were duly elected:

Dr. JOHN REDMAN, *President*.

WILLIAM SHIPPEN, jun. *Vice-President*.

ADAM KUHN,

SAMUEL DUFFIELD,

THOMAS PARKE,

CASPAR WISTAR,

BENJAMIN SAY, *Treasurer*.

THOMAS C. JAMES, *Secretary*.

Censors.

We observe and notice, with great satisfaction, the re-publication, in Philadelphia and Boston, of the Essays of our illustrious countryman, Count RUMFORD; a work, which deserves to be found in the libraries and in the hands of all who sincerely desire the prosperity of their country, and the happiness of their species.

FOREIGN.

AMONG the most important medical publications which have appeared in Great-Britain, the last year, may be reckoned, "Medical Reports, on the Effects of Water, cold and warm, as a Remedy in Febrile Diseases;" by Dr. James Currie, of Liverpool: and we regret that an accident has deprived us of the pleasure of laying before our readers an analysis of the work. The following facts appear to us too important to be passed over in silence:—The free use of cold air in the *small-pox* suggested to Dr. Currie the trial of another element; and his experience, though not large, leads him to affirm, that the affusion of cold water, in the eruptive fever of small-pox, has always mitigated the symptoms, and been followed by a mild disease. Instances are likewise given, by Dr. Currie, of the use of this remedy in the scarlatina anginosa,

(or canker rash); and in these it seemed entirely to extinguish the disease, and to preclude both the eruption and the sore-throat.

[*Monthly Review Enlarged, for Jan. 1798.*]

The cultivation of rice is still continued in many parts of the kingdom of Valencia, in Spain, notwithstanding repeated prohibitions. DON ANTONIO JOSEPH CAVANILLES, in his valuable work on the *Natural History, Geography, Agriculture, Population and Vegetable Products of the Kingdom of Valencia*, has entered into a very interesting discussion of the important question, whether the cultivation of this grain ought to be totally proscribed in Spain, on account of the fatal consequences attending it. To determine this point, he takes a review of the maladies occasioned by its cultivation, which requires a swampy soil, and, at the same time, a sultry climate. He gives a table of the births and deaths, from the year 1730 to 1787, in the different places in which the cultivation of rice has been practised. The result is, that during the space of fifty-eight years, there have been born 42,022 children in the places where rice was not cultivated, and only 36,248 where the cultivation of rice was carried on. On the other hand, during the same period of fifty-eight years, 39,595 persons have died in the places where rice was grown, and only 29,630 in the places where it was not cultivated.

[*Monthly Mag. for Jan. 1798.*]

Citizen Coulomb, some time since, caused several large poplars to be cut down on his estate. It was in the spring season, and the sap had begun to mount into the branches, which were covered with new leaves. As he was inspecting the workmen, he noticed that one of the trees, on being cut nearly through to the centre, emitted a sound similar to that produced by air bubbling from the surface of water. He perceived that this noise, as well as the discharge of a limpid and tasteless liquid, did not take place till the trees were nearly cut through to the centre. This led him to surmise, that the sap, in large trees, was only imparted to the branches by the medullary canal in the centre, with which the branches have a direct communication. To ascertain this point, he caused several large poplars to be pierced with a borer, when it appeared, that, within a certain distance of the centre, the instrument remained nearly dry; but no sooner did it penetrate to the middle, than a watery substance was emitted in great abundance, accompanied with the bubbling noise before mentioned. This effect was regularly produced on every repeated experiment during the summer; the sound, as well as the liquid emitted, bearing a due proportion to the precise degree of heat, and consequent transpiration of the foliage. At night, and during cold damp days, very little effect was discerned. From these experiments

it should seem that the only circulation of the sap in trees is effected by the parts which border on this central medullary canal, by means of the infinite number of horizontal *radii*, at the extremities of which the buds are formed, which establish a successive communication with the central canal. This communication, of course, augments in exact proportion to the growth of the bud till it becomes a branch.

[*Monthly Mag. for Jan. 1798.*]

Dr. Reimarus, correspondent of the Hamburgh Society, having remarked, that a few drops of belladonna, dissolved in water, and applied to the eyes, cause the pupil to dilate in so extraordinary a manner, that the iris is nearly reduced to nothing, was led, from this circumstance, to suggest the propriety of having recourse to this expedient, preparatory to the operation of couching the eye for a cataract. Of this intimation Dr. Grasmeyer, who practises this operation with great skill at Hamburgh, has made a very successful experiment. The effect produced, by the solution in question, on the eye, continues about half an hour, affording, by the dilatation of the pupil, an excellent opportunity of performing the operation, without danger of hurting the iris; and the palsy, if it may be so termed, which invades the retina, prevents the baneful consequences which otherwise might accrue from too sudden accession of light.

[*Monthly Mag. for Jan. 1798.*]

Gerard Vrolick, Professor of Physic and Botany at Amsterdam, has published a dissertation, at Leyden, on the annual defoliation of trees and vegetables; in which he maintains, that the leaves of trees have a distinct vegetable life, characterized by different periods, though connected with the life of the parent tree, and in some measure dependent thereon. On the annual return of the period of defoliation, the leaves drop off, and perish with age, but the life of the stock subsists. He maintains, that the dead leaves detach themselves from the branches by the same laws which cause any mortified part of an organized body to separate itself by the absorption of the live particles immediately connecting the decayed and healthy members. To prove this assertion, he cites examples from organized animals, which, as well as vegetables, possess many parts endowed with a distinct and separate life. Thus, for instance, the *fœtus* of frogs are furnished, on the sides of the head, with organs of respiration, analogous to the gills of fishes. These organs in a short time become indurated, die, and drop off, before the *individuum* has attained to the perfect developement of its existence. The horns of stags, which fall off and renovate every spring, complete, in the space of a year, all the successive periods of their distinct life; but a series of years is necessary to achieve the different periods of the existence of the animal.

[*Monthly Mag. for Jan. 1798.*]

The great consumption of soap, which, of course, is attended with a proportionate consumption of oil, renders the manufacture of woollen cloths very expensive. Several attempts have therefore been made to dispense with this ingredient, by substituting pot-ashes in its stead: but the strong alkaline properties of the latter never fail to corrode the cloth and render it unserviceable. To remedy this inconvenience, M. CHAPTAL has made experiments of a very ingenious process, by saturating the alkaline liquid wool, previous to its application to the manufacture of cloths. After lixiviating the ashes, he saturates the water, and lets it evaporate to a certain degree. He then throws into this lixivium pieces of cloth and wool, taking care to stir the composition till the rags are completely dissolved. An adequate proportion of wool is superadded, till the corrosive qualities of the liquid are perfectly absorbed, when it may be used without the smallest inconvenience or danger. It communicates an excellent gloss on the cloth, renders it completely supple, and, in every respect, answers all the purposes of common soap. It is necessary to observe, that the cloth, in the first instance, acquires a very strong and disagreeable smell, which, however, vanishes on its being bleached. And, secondly, the indiscriminate use of pieces of cloth, of various colours, in saturating the lixivium, communicates a dusky tinge to the cloth, which proves no detriment to dark cloths, but considerably affects the glossiness of lighter colours. This inconvenience is easily obviated, by employing, in the latter case, only *white* rags for saturating the lixivium. [Monthly Mag. for Feb. 1798,

The art of manufacturing a soap from refuse wool, hair, horns, hoofs, and other similar animal matters, was invented last year in France, and the method has been detailed in the "*Annales de Chimie*." Upon this discovery is founded a *Patent for a new method of making Soap*, which in January last was granted to Mr. JOHN CROOK, of Edinburgh, Chemist.

The basis of this manufacture is refuse *fish* of all kinds, as well as the animal matter that remains after the extraction of fish-oil. The fish, after being coarsely mashed, are put into water and washed from the blood and dirt, and afterwards are added gradually to a boiling solution of caustic alkali, till it refuses to dissolve any more, or is completely saturated. A quantity of coarse oil or tallow, equal in weight to $\frac{1}{2}$ part of the fish, is next added, and the mixture, while boiling, is united with as much turpentine alone, or turpentine and palm-oil, as the operator chooses. The soap thus formed, is to be exposed in a broad shallow vessel, for the space of about six weeks, to the open air, after which it is ready for use as a *soft soap*. The process for *hard soap* differs but little from the foregoing; the proportion of oil, or tallow, is to be equal to the weight of the fish

employed; and, after the addition of the rosin and palm-oil, the mixture is to be well boiled with common waste ley, and finished in the usual manner.

To the same specification is added a new method of bleaching, in which the only difference between this and the common mode of employing oxygenated muriatic acid, consists in the substitution of lime-water to an alkaline solution, in the application of the gas.

[*Monthly Mag. for Feb. 1798.*]

The following additional information, respecting the use of Oil as a remedy for the Plague, is extracted from the Monthly Magazine for April last.

To the Editor of the Monthly Magazine.

SIR,

In addition to the interesting account of the use of oil, in curing the plague, given in your Magazine for November last, permit me to offer you an original treatise, from the Rev. Father LEWIS of Pomia, administrator of the hospital of St. Anthony, at Smyrna, given by him to a friend of mine while at that place, some years ago, and containing an account of his use of oil, in curing the plague. I understand that the idea of the use of oil, in this disease, was suggested to Mr. BALDWIN, by observing that none of the porters constantly employed in loading the vessels with oil, in the various ports of the Mediterranean, and whose clothes and bodies were constantly swathed with that fluid, were ever attacked by the contagion, even when most prevalent. He communicated this observation to Father LEWIS, and he could not have pitched upon a person better fitted to bring its truth to the test of experiment.

Father LEWIS, I am informed, was originally a Frenchman of noble birth and liberal education. From some circumstances with which I am not acquainted, he was induced to dedicate himself to a religious life. And he concluded, that there was no way in which he could at once so completely testify his constant reliance on Divine Providence, and, at the same time, benefit his fellow-creatures, as becoming a religious assistant to an hospital established for the relief of persons afflicted with the plague, and administering of comfort to those whom all the world rejected.

With this view, he repaired to Smyrna, and attached himself to the hospital established there exclusively for those afflicted with the plague. His zeal and assiduity soon made him spiritual rector of the establishment, a situation which he so well deserved to fill. He has had three or four attacks of the plague, one of which totally deprived him of the sense of smell. This he considers as a great blessing, as it was the sense most offended in the course of his ministry. Before he was deprived of smell, he could generally judge pretty accurately by that means, whether a patient, when

brought into the hospital, would live or die. He does not hesitate to perform every office about a person in every stage of the pestilence, with no other precaution than to avoid inhaling their breath. No doubt, being habituated to the notion of contagion, and having a firm and unshaken reliance on the protection of Providence, tend to guard him against infection. He has been in his present situation near twenty years, and every friend to humanity must wish that he may long continue to fulfil his arduous duties.

It is worthy of remark, that some cases have lately been published in this country, where inunction with oil, together with forcing small quantities of it down the throat, seem to have cured the dreadful contagion of hydrophobia, even after the disease had begun.

The Italian is in Father LEWIS's own hand-writing, and in the translation more attention is paid to accuracy than elegance.

Your's,

A. P. B.

London, Jan. 1798.

TRANSLATION from the Italian of a Paper of Father LEWIS, of Smyrna, on the Use of Oil, as a Cure for the Plague.

The wonderful effects which have been produced by the inunction with common oil, in the present year, 1792, in this our city of Smyrna, miserably afflicted with the pestilential contagion, must necessarily render ever renowned the celebrated Signior BALDWIN, ingenious inventor of it, and the first who practised it during the last year, at Alexandria. But it will also oblige every one that loves, according to the divine precept, to succour his neighbour in the most lamentable and wretched condition, to which any man can be reduced on earth, not to neglect to bestow on him so meritorious an act of Christian piety, and humane commiseration; and to thank God, after so many ages, in which those who were so unfortunately afflicted with the plague have been abandoned, without hopes of any probable remedy, to the consequence of their disease; he hath at last vouchsafed, by the means of the said Signior, to make known a specific, as easily procured as it is useful to the relief and ease of the afflicted.

The repeated trials made with my own hands, not as a physician, which perhaps would not be of so much importance, but as the overseer of an infirmary which is under my own management, persuades me of what, without any exaggeration, I affirm; and notwithstanding those who acknowledge theory as the only guide of their medical operations, considering, for my part, experience as the tale-bearer of facts, I freely say, that the smearing with oil, after the manner of Mr. BALDWIN, is the only medicament which practically seems to promise to turn out a real method, by which we may be enabled to cure this contagious disease, which disgrace-

fully* ——— and that all the other discoveries, which during full twenty years that I have assisted those afflicted with plague, I have seen used in Smyrna, have in general appeared to be the productions of presumptuous ignorance, or wretched ostentation; and, therefore, not only useless, but prejudicial to such as, with a foolish enthusiasm, put their trust in them.

I shall not attempt philosophically to account for the facts I am about to detail. But guided, as I have already said, by experience alone, I submit the observations I have uninterruptedly made on the effects of the unction, during a period of five months, to the dispassionate judgment of those who are acquainted with such matters, hoping, that they will not attribute to imposture or deceit what is said in the pure spirit of doing good to my fellow men.

I have seen, then, that in the inunction with oil ———
——— and acts rather by shutting than by opening the pores
——— but over the whole of the body,
so as to produce a most copious sweat, preserves for the most part from new foundation of buboes, and tends to bring those which have already appeared to a suppuration, with the assistance of emollient cataplasms, which, in general, are extinguished with the cessation of the sweat.

Secondly, I have observed that the inunction should be followed by a considerable degree of friction of the limbs of the patient; and also, that these remedies should be applied as soon as possible after the attack of the disease; for if four or five days are suffered to elapse, as has happened in some patients, they are no longer of any use.

Thirdly, That none have been benefited by the inunction, however accurately performed, whose nervous system has been attacked by the malady, or who were afflicted with diarrhoea, both of which have always been considered by me, as well as by others, as fatal symptoms in this complaint, impossible to remedy.

Fourthly, Exclusive of those already seized with these mortal symptoms, I attribute to the inunction with oil, in which I repose the greatest confidence, the cure of sixty-four of my patients, who amounted this year to the number of one hundred and fifteen; as well as sixty-five others, which either by me, or by Signior Ebazaro d'Etian, physician to the plague-hospital, were anointed in this manner; and, I conclude, that if the inunction did not succeed with those who died, it was either because the consultant physicians refused it a trial, or because it was not had recourse to in time, or because it was not followed up with the requisite attention.

[*Monthly Mag. for April, 1798.*]

* Where blanks are left the original is defaced.

It appears from the succeeding letters that some debate concerning the anti-syphilitic powers of Nitric Acid, still continues in Great-Britain. In our next Number we hope to throw some light on this subject, from domestic sources.

To the Editor of the Monthly Magazine.

SIR,

It is well known that many medical men have been lately engaged in making experiments to ascertain whether, or not, the *venereal disease*, in all its complicated forms, can be radically cured by medicines containing a large proportion of oxygene, or vital air; and particularly by means of the nitrous acid and oxygenated muriate of pot-ash.

The very respectable testimonies which have already appeared in favour of these remedies, and the mild as well as expeditious manner in which they are said to operate, have induced me to give them a fair and unprejudiced trial, in a great variety of cases; and also to solicit the communications of other gentlemen in London, who have had opportunities of exhibiting them: but I am sorry to observe, that our experience obliges me to differ in opinion from those physicians and surgeons who have raised our expectations on this subject.

This diversity of opinion being founded on actual observation, and not any preconceived notions, has emboldened me to use the freedom of circulating a printed letter, to recommend the trial of the new medicines in advanced stages of the disease; *where well marked blotches, nodes, ulcerated fauces, ozæna, and other characteristic symptoms of a genuine syphilis appear*: since in these cases only can we be fully assured that the syphilitic poison exists in the constitution, and indubitably requires the administration of an anti-venereal medicine.

The most judicious practitioners, and those of the largest experience, are ready to confess, that although it be usually advisable to give mercury in recent stages of the venereal disease, with a view to prevent the farther progress of the symptoms, or the occurrence of a confirmed lues venerea, yet in very many such instances, the patients would escape and recover their health, by a proper plan of treatment, without the use of mercury: and, notwithstanding this fact may be denied by some speculative persons, it is too well authenticated for us to rest the proof of an anti-venereal remedy *solely, or even chiefly*, on its efficacy to remove the primary symptoms. All deductions from such premises must, therefore, be extremely fallacious and questionable.

I have taken the liberty to trouble you with these cursory hints, for the attention of medical men in the country, in hopes that you will favour me by inserting them in your Magazine: and I beg

leave, at the same time, to suggest, that it is my intention to publish the result of my experiments and inquiries, (under the title of "*Critical Remarks on the Venereal Disease*,"), together with such observations and cases as I may be honoured with from other practitioners.

W. BLAIR.

Great Russel-street, Bloomsbury-Square, Jan. 22, 1798.

[*Monthly Mag. for Jan. 1798.*]

To the Editor of the Monthly Magazine.

SIR,

In the collection of observations on nitrous acid, now in the press, and of which the first (and perhaps the second) century will appear in March next, I shall have the satisfaction of producing evidence from very various and distant quarters. I shall give a second letter from Mr. SCOTT of Bombay. The positive evidence is such as appears to be incapable of being invalidated by negative; especially as the facts to be brought forward will account to a certain extent for the general failures that are said to have been experienced in some places.

Some correspondents, who are advantageously situated, have been obliging enough to vary their trials considerably; and even to extend them to gonorrhœa.

I am, Sir, yours,

Clifton, Jan. 1, 1798.

T. BEDDOES.

P. S. I have seen great service from the nitrous acid in hepatic and dyspeptic cases. Several facts of the same nature have been generally mentioned to me. If particulars were transmitted to me, I would print them as an appendix to the Syphilitic Collection.

[*Monthly Mag. for Jan. 1798.*]

To the Editor of the Monthly Magazine.

SIR,

The last number of your Magazine announces that Dr. BEDDOES will soon favour the public with one or two more centuries of observations, on the anti-venereal effects of nitrous acid; and that he thinks he shall be able to bring forward such facts as shall, in some measure, account for the general failures that have happened. From an hint which this respectable physician has dropped, it appears, that "only a second letter from Mr. SCOTT, of Bombay," has yet fallen into his hands: I therefore conceive, that it may be a piece of agreeable intelligence to him, as well to the other advocates for "*the new specific*," to be informed, that several letters have been lately received from Bombay, in which Mr. SCOTT endeavours to corroborate his former remarks, and proposes another mode of administering this remedy. In the fourth letter, dated August the 5th. 1797, he relates "A case of lues

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venerea cured by bathing in the diluted nitric acid, that affords (he says) the most satisfactory evidence of its great and truly surprising efficacy:" and he even supposes that this method "is still more effectual than its internal use." The ingenious author concludes with these remarkable words: "In a few years, I think, that mercury, as a remedy for the lues venerea, will be banished by this acid; and, in some of my dreams for the improvement of the condition of man, I even imagine, that the poison of Syphilis may, in a great measure, be extinguished over the face of the earth, not by the efforts of the magistrates, but *by an agent like this, safe, simple and efficacious.*"

As the result of my own trials, in near sixty cases of lues venerea, differs, *in toto*, from the experience of Mr. SCOTT, and of many other gentlemen, I cannot but feel anxious to see a detail of "the facts" which Dr. BEDDOES has promised; and as the truth, wherever it may lie, can only arise from the general mass of evidence, I shall deem it incumbent upon me, to publish all my cases, as soon as the other duties of my profession afford me leisure. In the interim, I shall be happy to receive such additional communications as practitioners may please to honour me with. Every case, faithfully drawn up, will serve to throw light on this interesting subject; and therefore ought not to be lost to the public.

I cannot forbear suggesting a hint, which, I fear, some of our zealous experimenters stand in need of; that an hasty opinion may be the occasion of accumulated sufferings to our patients; and that a wise man will suspend his judgment until the matter of inquiry shall have been fully investigated: the introduction of a doubtful remedy, and the rejection of an almost infallible one, in the treatment of syphilis, is too serious an affair to be trifled with.

I remain, &c.

W. BLAIR.

Great Russel-street, Feb. 20, 1798.

[*Monthly Mag. for Feb. 1798.*]

To the Editor of the Monthly Magazine.

SIR,

The attention of medical men has lately been much directed to the effects of the Nitric Acid, exhibited internally: and though those effects have been found very different, by different practitioners, yet it is evident, from the whole collective testimony, that a very valuable medicine, which had been hitherto wholly neglected in its uncombined state, is added to the *Materia Medica*.

But as the disagreeable taste which it possesses, and the bulky form in which it has been given, have raised objections to its use, it is a matter of consequence, that gentlemen, who are engaged in making trials with it, should have early information, that there is great probability that the Nitric Acid, diluted to the degree at

which it has been given by the mouth, is, like Mercury, when applied to the skin, absorbed, and afterwards produces in the system the same effects that arise from its internal use.

By the last fleet from the East-Indies, I received a letter from Dr. SCOTT, of Bombay, the gentleman who first recommended, and himself commenced, the internal use of the Nitric Acid. Inclosed was a pamphlet, containing, in addition to the letters which he had before published, two additional ones, in which he communicates this important information, not founded on conjecture only, but on actual experiment.

In one inveterate case of Syphilis, in which the relief from Mercury had been imperfect and temporary, Dr. SCOTT applied cloths, wet with the Nitric Acid; with these the legs of his patients were surrounded, and the cloths were kept moist with additional water, for an hour or two daily. The relief received was remarkable. The symptoms, which were of the worst kind, disappeared; his strength returned; and, at the end of three months, he continued in good health, though, during that period, he used no other remedy than Nitric bathing.

In other cases, Dr. SCOTT caused the legs, and part of the thighs, to be immersed for an hour, night and morning, in water, acidulated with Nitric Acid, as far as the skin could bear it without uneasiness. This mode was attended with equal success. And, as a small quantity of Acid is sufficient to acidulate a large portion of water, and as the same acidulous water will last for a long time, Dr. SCOTT observes, that a bath so large as to cover the whole body may be prepared at a small expence.

From the marked action of the Nitric Acid, on the resinous substance of the bile, Dr. SCOTT thinks it probable, that bathing in dilute Nitric Acid may be serviceable in the early stages of the Yellow Fever. I am, Sir, your very humble servant,

Manchester, Feb. 22, 1798.

THOMAS HENRY.

[*Monthly Mag. for Feb. 1798.*]

To the Editor of the Monthly Magazine,

SIR,

When I wrote my note of Jan. 1, 1798, (which you inserted in your number for that month) I had not indeed seen Mr. SCOTT's third and fourth letters: neither had your correspondent Mr. BLAIR. For the ships, by which they were brought, had not arrived. By those ships Mr. SCOTT sent me a copy, requesting I would reprint the letters, in any publication which I might be preparing on the subject of nitrous acid. But I have since received from Mr. SCOTT, instructions to suppress what he says about the effect of bathing, as he is not satisfied with his trials. This retraction, together with remarks on some material points, will appear in the collection

now in the press; for it is too late (in consequence of what has been published here) to suppress the remarks on the nitrous bath, as the author wished.

I am afraid the collection of cases will be a few weeks longer in appearing than I gave reason to expect. A considerable number of communications are printed. But some, which were promised two months ago, are not yet come to hand—and I could wish to present the public with a respectable body of facts. I find by my correspondence in America, that they have been employing nitrous acid there—"with various, but, for the most part, with good success."—I hope we shall, ere long, know how far this and the other substances newly brought into question, are useful—that we may use them so far, and no farther.

I am, Sir, with good wishes for the success of your exertions,
yours,

THOMAS BEDDOES.

March 7, 1798.

[*Monthly Mag. for March, 1798.*]

The benevolent Dr. Lettsom, of London, published, in 1797, the first volume of a work entitled, "HINTS designed to promote Beneficence, Temperance, and Medical Science." It is a loosely-printed 8vo. of somewhat less than 300 pages. This publication, though consisting chiefly of the author's earlier performances, and but in part devoted to medical objects, may be read with advantage by physicians and students in general, and by all who have leisure and inclination for the pursuit of beneficence, temperance, and health.—The two first papers in this collection are—1. HINTS designed to promote the establishment of a *Dispensary*, for extending medical relief to the poor at their own habitations; and, 2. HINTS for the establishment of a *Medical Society* in London. Institutions of these kinds are met with in several places in the United States; and it is much to be desired that their number may be increased as long as medical science and wealth are so imperfectly distributed. Some useful *hints* may be extracted from these papers, to that end: to which we may add a remark, relative to medical associations, that a very general and radical defect of these institutions has been their comprizing too great a number of persons, and men more discordant in their manners and principles than in their professional opinions.

The fourth Essay is, "HINTS for establishing a Society for promoting useful Literature." The main object of the writer has since been well supplied by the establishment of the literary fund. In the United States, however, an institution, in some degree common to every State, is desirable, for the promotion of letters, by encouraging sales of native literary productions. This is a *hint* which we hope to see enlarged, and applied in a more suitable place.

The fifth, sixth, and seventh papers—viz. *HINTS* respecting the immediate Effects of Poverty; *HINTS* respecting the Distress of the Poor; and *HINTS* respecting a Substitute for *Wheat Bread*, apply only partially to our country. There are many occasions, however, in several of our large towns, for the exercise of that benevolent disposition which dictates these *hints*; and the reformer of our municipal regulations, which are, in many respects, shamefully deficient, will do well to consult them.

The next Essay—*HINTS* respecting the Effects of a *Little Drop*—deserves to be faithfully read and meditated by every citizen; and, in connection with Dr. Rush's paper on the effects of spirituous liquors, and Dr. Beddoes' introductory lecture, merits to be circulated, by means of all our periodical publications, particularly our newspapers, to every village in the United States. To this Essay, the next—*HINTS* respecting the Effects of *Tavern Feasts*—is an excellent appendix.

The thirteenth paper—"HINTS for promoting a BEE SOCIETY," should receive the attentive perusal of the agriculturist and country gentleman.

It will be doing a real service to the interests of mankind to publish a neat and cheap edition of this volume in our country; nor do we doubt of its being so well received as to make it worthy the attention of some enterprising bookseller.

The reader will recollect the account given of a new and successful mode of treating *Diabetes Mellitus*, discovered by Dr. Rollo, in vol. i. p. 259. Dr. Rollo's work has since come into our hands, which enables us to present the following additional particulars.

The author supposes the nature and treatment of *Diabetes Mellitus* may be explained on the new doctrines of Chemistry; and that the disease may be believed to depend on a hyper-oxygenated state of the system, formed by a morbid condition of the stomach, and peculiar combinations in it, probably afterwards maintained by a certain condition of the skin and lungs. Hence the obvious remedies would be those abstracting oxygene from the system, removing the morbid condition of the stomach and its peculiar combinations, and changing the condition of the skin and lungs.

From two cases of this disease, treated by Dr. Rollo, he draws the following inferences: 1. That the *Diabetes Mellitus* is a disease of the stomach, &c. proceeding from some morbid change in the natural powers of digestion and assimilation. 2. That the kidneys, and other parts of the system, as the head and skin, are affected secondarily and generally by sympathy, as well as by a peculiar stimulus. 3. That the stomach-affection consists in an increased action and secretion, with vitiation of the gastric fluid,

and probably on too active a state of the lacteal absorbents. 4. That the cure of the disease is accomplished by a regimen and medicines preventing the formation of sugar, and diminishing the increased action of the stomach. 5. That confinement, an entire abstinence from any species of vegetable matter, a diet solely of animal food, with emetics, hepatized ammonia, and narcotics; and occasionally the use of sulphur and castor oil, when requisite, comprehend the principal means to be employed. 6. That the success of the treatment in a great measure establishes the five preceding inferences.

From Dr. Rollo's work on *Diabetes Mellitus*, we extract the following notice of the intended use of acids in the malignant fevers of the West-Indies. See. vol. i. p. 310.

"The nitric and citric acids have not been fully tried in fever. There is now, however, a prospect of their soon being so, as on this subject we have written to *Dr. Chisholm*, who has an extensive range of practice by his appointment of *Inspector of Ordnance Hospitals, in the West-Indies*; and for this purpose a quantity of nitrous acid has been sent out, on our recommendation, by the BOARD OF ORDNANCE—of the citric acid there is plenty in the country. We have no doubt he will try both acids in the fever, and those affections in which he has given mercury with success. We are happy in having, by our recommendation to *Dr. Chisholm*, unknowingly co-operated with the wishes of *Dr. Currie*, of *Liverpool*, who has informed us, that he has made application to *SIR JOSEPH BANKS*, requesting him to solicit government to send out nitrous acid to the West-Indies, to be used in the fever, which has proved so fatal to the soldier and the sailor." It also appears, from a subsequent part of the publication, that *Dr. Currie* has written, on his personal account, to the West-Indies, to the same effect.

In vol. i. p. 123, we stated, in very general terms, an account of some experiments concerning the effects of compression of the extremities by the tourniquet, in stopping the cold fit of intermittents, made by *Mr. Kellie*, a surgeon in the British navy, published in the 19th volume of *Duncan's Medical Commentaries*.

In the 2d vol. of *Duncan's Annals of Medicine*, we find a further account of similar experiments made by *Mr. Kellie*. From the facts related in his first publication, he thought himself warranted to conclude—1. That at any time during the cold fit of an intermittent, if tourniquets be so applied as to obstruct the circulation in two of the extremities, in three minutes thereafter the hot stage will be induced. 2. That if tourniquets be applied, previous to the accession of the paroxysm, the cold stage will be entirely prevented. 3. That when the cold stage of an ague is

either thus shortened, or altogether prevented, the following hot stage is rendered both milder and shorter in duration.

From experiments made on himself, Mr. Kellie concludes that, in the healthy body, compression of two or more extremities, by tourniquets, occasions—1. An increased frequency, fulness and strength of the pulse, soon after followed by a diminution of the frequency. 2. Increase of heat and flushing, especially of the face and breast. 3. Anxiety, more frequent respiration, and a sense of fulness about the præcordia, gradually increasing till the person becomes vertiginous and faint. 3. If the compression be continued for 20 minutes or half an hour, the vision becomes confused, objects appear clouded or double, small black spectra are seen to float before the eyes, drops of sweat stand on the face, neck and breast, and the increasing tendency to deliquium demands the removal of the tourniquets. 5. On restoring the circulation, these symptoms almost immediately vanish, a coldness about the præcordia, chilliness of the whole body, attended sometimes with shudderings and yawnings, are perceived; the blood flows with a painful heat through the vessels which had been compressed; the whole limb is suffused with a glow, succeeded by a sensation of prickling; the pulse continues slow, and generally becomes slower than it was before the compressions were removed, beating, at the same time, full and soft. 6. If the circulation be obstructed in one arm for 15 minutes, or half an hour, on the removal of compression the pulse becomes fuller and stronger than in the other arm.

If the tourniquets be properly applied, so as instantly and completely to compress the artery, the veins of the compressed limb do not swell, and the limb itself feels soft and flaccid rather than hard.

In intermittents, the compression of the two iliac arteries, or of one iliac and one subclavian, may be continued for 10 or 15 minutes at the commencement of the cold stage; but if continued longer, on removal of the tourniquets the rigors and succussions may return.

From observing the effects of compression in intermittents, Mr. Kellie was induced to try it in other febrile diseases; and the results of 13 different cases induce him to conclude—1. That compression by the tourniquet, in the incipient stages of pyrexia, like emetics, sometimes arrests the disease. 2. That in other and more advanced stages of pyrexia, compression may be employed to moderate the symptoms;—when phlogistic diathesis prevails, the application should be continued till vertigo and tendency to deliquium be induced, which will be found much to diminish the action of the heart and arteries; but in cases of arterial debility, the compression should only be continued while the pulse remains fuller,

stronger and slower. 3. That when employed in acute rheumatism, the vigour of circulation, heat and pain are for a few minutes increased; that in from 5 to 15 minutes, the pains are totally removed; that in 15 or 20 minutes the heat is diminished, and the velocity of the pulse reduced; that, on restoring the circulation, the pulse becomes slower, and the temperature of the skin more moderate; that these symptoms, thus relieved or removed, seldom return for several hours, sometimes not for a whole day; and that the following attacks are less severe than the preceding ones. 4. That, in acute rheumatism, the tourniquets should be applied on the affected extremities. And, lastly, that rheumatic pains, without fever, may be thus certainly removed or relieved.

Mr. Kellie is disposed to think, that inflammations of the extremities might be speedily cured by compressing the arteries which supply the affected parts, by opening a correspondent vein, or by scarifying the inflamed surface. Such a practice might, he suggests, be very useful in the incipient state of white swellings, and in acute inflammations of the joints.

Compression, Mr. Kellie supposes, must cause a greater quantity of blood to pass through the heart and lungs in a given time, and a larger supply to be sent to the brain and other viscera. These organs must, therefore, be stimulated into greater exertions; and hence the first effects of compression are, increased vigour of circulation, and the removal of atony. In this manner it will serve as a remedy in diseases of debility.

But as the long-continued operation of any stimulus must, at length, produce an inert or quiescent state of the system; so, if compression be long applied, the force of the circulation will be diminished. And on this principle we must explain the seemingly opposite effects of compression in exciting the system from the torpor which prevails during the cold chill of intermittents, and in allaying the excessive action of acute rheumatism.

Mr. Kellie also supposes that this mode of partially arresting the circulation may affect the system by compressing the brain. In order to allay the violent action of the heart and arteries, in inflammatory fevers, Dr. Darwin proposes gentle compression of the brain, produced by whirling the patient round in a suspended bed, with the head most distant from the centre of motion. By compressing the two subclavian arteries as they pass over the first rib, Mr. Kellie assures us, the same purpose may be accomplished in the safest, easiest, and most effectual manner.

We have received from Paris, since our last Number, the Work of Dr. Swediaur, therein referred to, entitled, "Traité complet sur les Symptômes, les Effets, la Nature, et le Traitement des Maladies Syphilitiques;" published in March last, in two vols. 8vo.

In this work Dr. Swediaur delivers, at some length, his reasons for supposing that mercury subdues the venereal virus, in virtue of the oxygene which its various preparations contain; but this reasoning, though ingenious and interesting, cannot be reduced within the necessary limits of the present article.

He refers to a memoir, read before the Society of Medicine, on the 7th Messidor, 5th year of the Republic, by Citizen Alyon, one of the medical officers of the Military Hospital of Val-de-grace, in Paris, a former pupil of Professor Fourcroy, on the anti-venereal and anti-psoric virtues of oxygene, which throws much light on this important subject.

For nearly three centuries, says Citizen Alyon, has mercury been tortured in a thousand different ways, and its preparations multiplied, without any satisfactory explanation of its effects upon the animal economy. It was, indeed, conjectured, some time ago, that mercurial preparations owed their efficacy to oxygene; but it remained to support this theory by unexceptionable facts. Who, says he, could ever consider mercury as an anti-syphilitic remedy in its metallic state? Who does not know that many pounds of it may be swallowed without injury, and that it will pass through the alimentary canal, not only without danger, but without effect? But, besides, it is now well understood that mercury is the most oxidable of all the metals; that, in order to combine it with oxygene, it is sufficient to agitate it in the air; that saliva can convert it to oxyd; that, on the other hand, it is remarkably de-oxidable; and that it easily abandons the oxygene with which it is combined. If these things are considered, and if the facility with which oxygene unites with animal matter, and the tendency which the latter possesses to seize it from acids and oxyds, be duly recollected, it must be readily conceived in what manner all mercurial preparations operate. To find, therefore, a powerful anti-syphilitic remedy, an active and permanent stimulant, it will be sufficient to take a substance, containing a large quantity of oxygene, and readily yielding it up to animal matter.

Proceeding on this principle, Citizen Alyon has procured several combinations of oxygene, which he has used as anti-syphilitics with the greatest success. It was on this principle that he thought of an ointment of oxygene, in preference to the blue mercurial ointment, and which produced the same effects. It was upon the same principle that he employed the super-oxygenated muriate of pot-ash, externally, to heal chancres and syphilitic ul-

cers; the effects of which were more expeditious, and more to be relied on, than any mercurial preparations hitherto known.

In the Military Hospital of St. Denis, he has repeated several experiments, which confirm the facts above stated. By augmenting the doses of the oxygenated ointment, he produced ptyalism, swelling of the tonsils, and that diarrhœa which results from mercurial friction pushed very far.

Among the cases reported by Citizen Alyon, we shall mention two, which seem to countenance his opinion, that oxygene acts more expeditiously and efficaciously than the preparations of mercury, which he considers merely as the vehicles of oxygene, when the treatment by friction is adopted.

A patient, 38 years old, had herpetic ulcers on his hands, legs, and on one of his cheeks. He was directed to use the bath three days. Citizen Alyon then ordered all the ulcerated parts to be rubbed two or three times with half a drachm of the oxygenated ointment;* they were cicatrized in eleven days, without the patient ever perceiving any effect from the metastasis which the topical anti-herpetic remedies, hitherto used, almost always produce. It cannot be supposed, says M. Alyon, that the oxygenated ointment acts like the repellent and astringent applications, as it relieves, by enchantment as it were, the sharp pains of the affected parts.

A soldier was affected with a large ulcer in the fauces, for which he had used a great many remedies at Beauvais, and, for forty days, had taken Van Swieten's solution without benefit. He touched the ulcer three times a day with the solution of the super-oxygenated muriate of pot-ash, and in seven days it was completely cicatrized.

* R^x Axungie porcine purificatæ lbj.

Liquefiat leni igne, dein adde

Acidi Nitrici puri (32 graduum) ℥ ij.

Massam igni expositam tubo vitreo diligenter agita, donec ebullire ceperit, tunc ab igne remotam depone ut frigescat.

Ufus eximius in ulceribus syphiliticis, herpette et psora.

CORRESPONDENCE.

To the Editors of the Medical Repository.

GENTLEMEN,

THE 3d and 4th Numbers of the Medical Repository have just come to hand. In the 3d Number, I find a review of an Inaugural Dissertation on the Bilious Malignant Fever, &c. (p. 353.) Some of the opinions in this work you have controverted as erroneous. It would be happy for society, and certainly honourable to the parties, if *all contention* were only from the desire to discover, establish and defend truth. This disposition, certainly, ought more especially to influence gentlemen in the profession of medicine; the science of which, it must be acknowledged, is yet much involved in the darkness of hypothesis and conjecture. We arrive at certainty only through a long process of deductive reasoning, supported by facts and experiments, and confirmed by observation and long experience. Indeed, truth is no where bestowed with unconditional profusion: its access to the mind is too often prevented by prejudice and passion. If we would possess it, it must be sought after and cultivated with all the powers of human reason. To this end our exertions should be *united*; but, if opinions are opposed, let the opposition be encouraged only with the hope, that the collision will excite and kindle into light the latent sparks of truth.

What first meets your animadversion, in the above-mentioned work, is the assertion, "that poisons, operating upon the excitability or sensorial power of the constitution, can produce but *one action at a time*; and when the constitution has experienced this action, it becomes no longer susceptible of it afterwards." This assertion is said to flow from "a hasty spirit of decision, and to be unqualified." I stated, (p. 7.) that it is a law with *most* of those poisons which produce their effects by a *critical fever*, that a constitution which has once gone through the action excited by them is no longer susceptible of it; because the poison is so powerful and active as to destroy the life of the part; or, that the constitution becomes habituated to the particular stimulus of the poison, and, therefore, upon a second application to the part or parts of the system, they are undisturbed by, or are insensible to it.

You state a case "where the human constitution was under the operation of mercurial salivation, intermittent fever, and syphilitic contagion, *all at once*." That the human constitution can be affected *alternately* by syphilitic contagion, mercurial stimulus, and a fever paroxysm, is not doubted; but not *all at once*. The excitability or sensorial power is a whole, or one and indivisible, and is *totally* occupied by every individual and distinct impression or stimulation; and it is as much impossible for it to be under two excitements *at once*, as it is to make *two* unities out of *one*—or as it would be for the mind to receive two ideas at the same time. Were it otherwise, I much doubt whether a single disease could be cured. Is it not a true and a com-

mon maxim, that the lesser pain is absorbed or lost in the greater? and are there not many applications of remedies upon this principle?

Your strictures fall next upon the remark, that the more simple and homogeneous a substance is, the more powerful and active. "Is this the case," you ask, "with carbone, sulphur, or hydrogen? Are acids simple bodies? And is it to their simplicity and homogeneity these powerful substances owe their activity?" I only add, is caloric, or the matter of heat, a simple matter? and is there any thing more subtle and powerfully active in nature? "But of this enough." Yes, Sirs, quite enough to establish the position beyond a doubt. It was not asserted that acids are simple bodies; but add a third or a fourth substance, water for instance, and they become at once more inert. To what purpose are the more critical and lengthy processes in chemistry, but to simplify substances by stripping them of heterogeneous matters? Is a *caput mortuum* less or more active than sublimate mercury?

Upon the assertion, that poisons, miasma, or morbidic effluvia, are of too subtle a nature for chemical analysis, and that their constituent materials are utterly unknown, you raise the following queries: "Are not the various combinations of quick-silver, lead, copper, arsenic, with oxygene and acids, very well understood? Do we not comprehend the constitution of carbonic acid gas? And are not the various animal exhalations composed of azote, charged with various degrees of oxygene, well understood, both synthetically and analytically?" My observations were confined to morbidic poisons, or such as produce distinct diseases in the human constitution. Mineral poisons or their effects were not considered. All that I ever meant to affirm, you have allowed—"that the precise constitution of a number of them (morbid poisons) is yet unknown."

You think me tinctured with sentiments imbibed from Swedenborg's doctrine of influx. This I am not disposed to deny. I think Swedenborg, so far as I comprehend him, to be a profound philosopher and theologist. By this confession, it is not expected to lessen the prejudice imbibed against him, (for such I must call it) or to add to his celebrity. It is what I owe to truth, and it flows from real conviction.

In the different works of this author may be found those ideas and hints which the celebrated Dr. Darwin has wrought into a beautiful system, and which will stand a monument of genius *ære perennius*. Certainly those notions of Dr. Darwin which are fundamental of his work, very nearly coincide with those that are to be met with in various parts of Swedenborg's writings. Thus *Darwin*, in his doctrine of ideas, which, perhaps, is the most ingenious part of his work, contends, and clearly proves, that "they consist of motions or configurations of solid fibres, and that these are propagated to the sensorium, or brain, and there become fixed. (See addition 5th, vol. iii. p. 312.)

Swedenborg. "There is no existence, spiritual or natural, but in some form; all our thoughts and affections, or ideas, and the pleasure or pain which they occasion, are mere changes and variations of the substances of the brain or sensorium." Further: "All the viscera of the body perform their functions entirely by the variations of the state of their organic forms." (See the note subjoined to my Dissertation, p. 47.)

Darwin—makes life to consist in a series of catenated fibrous motions, excited by sensorial power or external stimuli. His whole catalogue of diseases is no more than certain derangements of these catenated motions. His division of them is according to the different degrees of sensorial excitement, which, generally, he denominates, *irritation, sensation, volition, and association*.

He says, (vol. i. p. 17. sec. 3.) "It is probable all our muscular motions, as well those that are voluntary as those of the heart and glandular system, were originally excited by the stimulus of something external of the organ."

Darwin, vol. i. p. 20. "If you ask what organs of sense can be excited into motion, when you call up the ideas of wisdom or benevolence? I ask you by what organs of sense you first became acquainted with these ideas? and the answer will be reciprocal; for it is certain that all our ideas were originally acquired by our organs of sense; for whatever excites our perception must be external to the organ that perceives it, and we have no other inlets to knowledge but by our perceptions."

Swedenborg. "Love of wisdom, or the thoughts, perceptions, and affections, are really and actually substance and form. Man has five senses, viz. the feeling, taste, smell, hearing and sight. The subject of feeling is the skin with which man is encompassed; the substance and form itself of the skin cause it to feel what is applied; the sense of feeling is not in the things which are applied, but it is the substance and form of the skin which is the subject; the sense is only an *affection* thereof from things applied. It is the same with the other four senses. Hence it follows that the sight, hearing, smell, taste, and feeling, are the *organs themselves*, considered in their substance and form; and that whilst they are *affected* the *sense is produced*. It is the same with love and wisdom, with this difference only, that the substances and forms, which are love and wisdom, do not exist before the eyes as the organs of the external senses; but still no one can deny that those things of wisdom and love, which are thoughts, perceptions, and affections, are substances and forms, and that they are not volatile entities flowing from nothing, or abstracted from that real and actual substance and form which is the subject: for there are, in the brain, innumerable substances and forms, in which every interior sense, which hath relation to the understanding and will, resides." (See Angelic Wisdom concerning the Divine Love, part i. No. 41 and 42.)

Darwin again, vol. i. sec. 1. "The whole of nature may be supposed to consist of two essences or substances; one of which may be termed spirit and the other matter. The former of these possesses the power to commence or produce motion, and the latter to receive and communicate it."

Swedenborg. "All actuation of matter, primarily considered, is from a spiritual cause." Ibid.

Darwin, sec. 11. "The living principle, or the spirit of animation, resides throughout the body."

Swedenborg. "Life is in the whole and every part of the body." (See, as above, part v. No. 366.)

Many more passages might be adduced from these authors, where there is a very close agreement of ideas; but for this there is not room, neither could I do it readily, having read their works but once cursorily, and none of Swedenborg's philosophical works. I shall only add one extract more, purposely to show, that the boasted discovery, so eagerly claimed by late medical philosophers, that the blood is purified and nourished by a congenial principle of the atmosphere, the vital air, or oxygene gas, Swedenborg understood, and has clearly pointed out.

"That the blood, while passing through the lungs, purifies itself from things indigested, is evident, not only from the influent blood, which is venous, and, consequently, replete with chyle collected from food and drink, but also from the diminished quantity of blood returned into the left ventricle of the heart,

and also from the expirations which are humid, and from their being perceived by others from the smell.

"That the blood from the air which is attracted nourisheth itself with things conduible, is evident from the immense abundance of odours and exhalations issuing continually from shrubberies, flower-gardens, and nurseries of trees; and from the immense quantity of salts, of various kinds, issuing with waters from the earth, rivers, and lakes; and from the immense quantity of exhalations and effluvia from men and animals, with which the air is impregnated; that these flow into the lungs with the air which is attracted, cannot be denied, and as this cannot be denied, neither can it be denied that the blood attracts therefrom such things as are conduible to it: Hence it is that the blood returned into the left ventricle of the heart is *changed into arterial blood, and becomes florid*, (note.) These considerations prove that the blood purifies itself from things heterogeneous, and nourisheth itself with things homogeneous." (The same work as above-mentioned, part v. No. 420.)

The above I hand you for publication, should it receive your approbation. —Of your work, permit me to say, that it is held in much estimation by those who have perused it. They consider it as greatly useful and highly honourable as an American publication, and feel interested in giving it currency. I have added one to the list of subscribers. Wishing your arduous undertaking that success and encouragement which it certainly merits, from the ability, candour and judgment with which it is conducted, I am, gentlemen, with much respect and esteem, your humble servant,

SAMUEL BROWN,

Boston, May 28, 1798.



